

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA



CURRICULUM GUIDE

**ASSOCIATE OF SCIENCE
in
PHARMACY TECHNICIAN**



Acknowledgement

The Council of Community Colleges of Jamaica acknowledges all who participated in the Curriculum review session which facilitated revision and update of this Curriculum guide. Persons listed below provided useful information related to content of the curriculum, reviewed course outlines, and formatted this guide for publication.

Institution	Participants
Externals	Dr Stephanie Mullings
The Council of Community Colleges of Jamaica	Donna Powell Wilson Shanique Walker Carty

Table of Contents

1. Programme Rationale	4
2. Programme Description	4
3. Programme Goals.....	5
4. Students Learning Outcomes.....	6
5. Employment/Career Opportunities	6
6. Target Group.....	7
7. Matriculation Requirements	7
8. Delivery and Learning Strategies	8
9. Grading Scheme.....	9
10. Course/Module Description.....	11
11. Programme Structure.....	16
12. Programme Requirements.....	18
13. References.....	19
14. Course Outlines	22-208

1. Programme Rationale

As the demand for prescription and non-prescription pharmaceuticals increases, the need for proficient personnel to manage drugs is required. The pharmacist is supported by the technicians in preparing and administering pharmaceuticals. In the past, the Pharmacy Technician's job was learned on the job under the tutelage of a pharmacist and a senior technician. While apprenticeship training still exists in some jurisdictions, the profession has grown and there are institutions that prepare competent Pharmacy Technicians to enter the field. These programmes are recognised by national bodies. With these demands the formal Pharmacy Technician training is increasingly important.

2. Programme Description

The ***Associate of Science Degree in Pharmacy Technician*** programme has a duration of two (2) years, over four (4) semesters and a summer internship. Students who are enrolled in this programme will be exposed to industry practices and experiences. Although the curriculum is pharmacy-specific, students will be exposed to a wider range of courses, including more advanced courses in chemistry and accounting. Students will have a focus on the administrative aspects of the Pharmacy Technician duties. Once students graduate with an associate degree in Pharmacy Technician, to matriculate into Pharmacy applicants have CAPE 1 and II Chemistry and Biology.

The Associate of Science degree program in Pharmacy Technician will help students develop the necessary skills and background so they can assist Pharmacists in providing medication and other health care products to patients. Students will gain an understanding of medical and pharmaceutical technology, pharmacology, pharmacy record keeping, pharmaceutical techniques, and pharmacy law and ethics. In addition, students' skills in simulated community/retail and hospital pharmacies will be developed during the practical experiential learning the last semester.

Upon completion of the programme, students will be awarded the ***Associate of Science degree in Pharmacy Technician***

3. Programme Goals

The purpose of the **Associate of Applied Science in Pharmacy Technician** program is to educate and graduate Pharmacy Technician capable of assisting pharmacists in the preparation and dispensing of medications, management of inventory and other pharmacy competences. The program seeks to prepare work ready graduates for healthcare settings such as hospitals, retail, long-term care facilities, home healthcare agencies, clinic pharmacies, and drug wholesalers.

This programme is designed to provide students with or without prior experience in the field of Pharmacy with a formal education that meets and exceeds certification standards. The programme aims to prepare competent marketable professional graduates who will provide excellent service to the general public pharmaceutical profession

In the Pharmacy Technician program, students will examine evolving concepts from the role of the Pharmacy Technician, to ordering pharmaceuticals prescription and non-prescription items, compounding and filling prescriptions with preciseness.

The nature of the instruction will be student-centered facilitated by competent lecturers.

4. Students Learning Outcomes

Upon completion of this programme of study, students will gain hands-on experience and learn to:

1. file daily drug orders.
2. evaluate prior pharmacy requests.
3. resolve customer complaints.
4. process return drugs.
5. assist patients in need of medication
6. review drug requests.
7. assist pharmacist in selecting and preparing medications.
8. pre-pack frequently ordered medications.
9. facilitate resolution of drug coverage issues.
10. verify insurance benefit.
11. review orders for completeness.
12. assist in monthly refills.
13. handle inbound telephone inquiries.
14. provide effective customer service.
15. operate cash registers.

5. Employment/Career Opportunities

Pharmacy technicians work under the direct supervision of a licensed Pharmacist to dispense medication and provide information to customers. Pharmacy Technicians typically work at a drugstore, /community pharmacy, hospital, clinic, regulatory agency, drug distribution facility or other medical facilities. This position involves working with pharmacists, patients and occasionally with pharmaceutical representatives.

Program graduates are prepared to assist Pharmacists with the daily duties in a pharmacy.

Graduates can seek employment in:

1. Community /Retail pharmacies
2. Hospitals
3. Clinics
4. Assisted living facilities
5. Nursing homes
6. Healthcare agencies
7. Regulatory Agencies
8. Distribution/drug companies

6. Target Group

This programme targets any of the following individuals:

- persons with some industry experience but need formal training.
- mature learners interested in pursuing a tertiary education in Pharmacy Technician
- high school graduates seeking certification in the Pharmacy Technician services.

7. Matriculation Requirements

To be eligible for entry, applicants must satisfy one of the following matriculation requirements:

1. Standard forms of matriculation

To be considered for admission, applicants must possess a minimum of five (5) passes in subjects at CXC/CSEC general proficiency grades I-III (grade III from June 1998), or GCE O'Level (grades A-C) or City and Guilds (Stage III)

Compulsory subjects:

- English 'A' or English Language
- Mathematics
- Chemistry (or students do Chemistry and a subject while doing the course, to be completed before the end of the first year of the program)
- Science Subject (Physics, Biology or Human and Social Biology)

7.1 Alternate Forms of Matriculation

Applicants may be accepted into a programme of study with five (5) CSEC/GCE subjects including English 'A' or English Language but are trailing in Mathematics, may complete Foundation Concepts in Mathematics I, II and III or CSEC/GCE Mathematics. This, however, **MUST** be completed before the end of the first year of the programme.

7.2 Additional forms of matriculation

- a. Equivalent qualification(s) as determined by the CCCJ
- b. Mature Status as determined by the CCCJ

8. Delivery and Learning Strategies

The methods of delivery or modes of instruction and learning are expected to deliver/facilitate content appropriate to the subject area and learning styles of students to ensure that course objectives are met. The teaching-learning strategies to be employed will incorporate relevant and current technologies and will also include but are not limited to:

- | | |
|-----------------------------|------------------------|
| • Interactive lectures | Observations |
| • Simulations | Presentations |
| • Demonstrations | Laboratory exercises |
| • Project-based learning | Self-directed learning |
| • Field-based learning | Problem solving |
| • Case studies and Analysis | Discussions |
| • Role plays | Guided practice |
| • Research | Guest Lectures |

The delivery and learning strategies/modes of instruction are intended to:

1. increase the independence of the learner
2. create critical thinkers
3. equip learners to enter the corporate world or start their own business
4. assist the learner to:
 - a. develop research skills
 - b. analyze and evaluate data
 - c. plan, design and implement projects

Faculty members or teams will determine for themselves the appropriate teaching/learning strategies for each curriculum unit, based on the intended learning outcomes, the needs of their learners and the availability of resources. It is intended that teaching/learning strategies utilized are those which encourage the progressive development of the learners' independent learning skills in all courses.

9. Grading Scheme

1. Grading

Typically, a student's final grade is calculated by the combination of the course work grade and the final examination grade. The specific course outline can be consulted regarding the applicable grading scheme.

A student who attains a combined grade of:

- a. 50% or more is deemed to have passed the course
- b. at least 45% but less than 49% is deemed to have failed the course, and qualifies for a supplemental examination¹
- c. less than 44% is deemed to have failed the course and will be required to repeat the course in its entirety

Examination Grades, Points and Distribution

Effective Academic Year September 2014

Percentage Scale	Grade	Grade Point	Student Performance Description
90-100	A	4.00	Excellent
80-89	A-	3.67	
75-79	B+	3.33	Good
70-74	B	3.00	
65-69	B-	2.67	

¹The supplemental examination must be done at the next available sitting within the current academic year. The grade received therein shall be the student's final grade for the course. A student who fails a supplemental examination is required to repeat the course in its entirety.

60-64	C+	2.33	Satisfactory
55-59	C	2.00	
50-54	C-	1.67	
45-49	D+	1.33	Marginal Fail – Re-sit
40-44	D	1.00	Fail – Redo
0-39	U	0.00	Unsatisfactory

LEVELS OF AWARDS

BACHELOR OF SCIENCE		ASSOCIATE OF ARTS ASSOCIATE OF SCIENCE	
G.P.A	Classification	G.P.A	Classification
3.70 - 4.00	First Class Honours	3.70 - 4.00	Honours
3.30 - 3.69	Second Class Honours (Upper)	2.70 - 3.69	Credit
2.70 - 3.29	Second Class Honours (Lower)		
1.70 - 2.69	Pass	1.70 - 2.69	Pass

10. Course/module Description

Administrative Care Management (PTCM2201)

This course will explain the Jamaica Health Care System within the context of what is involved in Administrative Care Management (ACM). ACM is defined as a set of activities designed to assist patients and their support systems in managing general health, unique conditions and related psychosocial problems more effectively, with the aims of improving patients' functional health status.

This is a one (1) semester course that will provide students with the understanding of the functions, principles, and skills in management to successfully administer the total care of clients/patients from birth to end of life. The programme will expose students to the theory applied to their practice while working with patients from within homes, immediate care givers, medical/pharmacological practitioners in home or hospital, prepare simple psycho-social assessments and to be able to design brief interventions benefitting client's mental stability, as well as, to provide essential knowledge and skills to work in health and related facilities

Emphasis will focus on basic Advocacy skills based on the fact that persons in this field of practice are expected to be advocates for their clients making it necessary for students to be aware to guide clients/patients and their families through term of care services to manage their health.

Communication 1 (COMM1101)

This course is designed to develop the community college learner's ability to write expository essays, 'projects or papers' and make oral presentations in varying contexts in and out of the classroom. It is hoped that this course will be used by learners to help them fulfil the academic evaluation requirements of the courses they will sit at this level and help them to become better communicators. The course gives learners practice in the manipulation of secondary sources of information to support their own ideas in writing and speech.

Diseases of Human Body (PTDB1101)

This course will provide students with a comprehensive look at diseases and disorders that affect the human body. Students will learn important concepts related to human diseases such as terminology used and mechanisms of disease. The causes, diagnoses, and treatment for human diseases will be presented according to the major systems of the body. Common diseases will be analysed in greater detail, including signs and symptoms and prevention.

Field Practicum (PTFP2301)

The Field Practicum is designed to explore the tangible and soft professional competencies that students must be able to demonstrate in order to be considered competent. This practical experience will be carried out in a pharmacy. It presents an opportunity to demonstrate skills taught in the program of study.

Fundamentals of Information Technology (ITEC1104)

This course is designed to provide learners with a comprehensive knowledge of the application of computers in different organizations. It includes a thorough introduction to computers and information technology, information systems, computer networks and systems security. It also aims at equipping learners with practical operating system, word processing, presentation, spreadsheet, database, and Internet search techniques skills.

Healthcare Law and Ethics (PTLE2201)

In this course, students will learn how law affects healthcare practitioners and Pharmacy practice, the basics of the process of litigation and its alternatives, confidentiality of healthcare information, and laws regulating the procurement and dispense of pharmaceuticals. Topics to be discussed will include information collected and maintained by The Standards and Regulation Division of the Ministry of Health (MOH), and The National Essential Medicines list; Vital, Essential, and Necessary (VEN). Case studies are employed to provide students a contextual focus on specific aspects of healthcare law and ethics.

Human Anatomy and Physiology I (NAPH1101)

This course introduces learners to normal anatomy and physiology of the human body. An organ systems approach to learning the human body will be taken and learners will examine the relationship of structure and function, the interrelationship of different organ systems and how body physiology works to maintain homeostasis. The course is divided into two parts. **Part 1** introduces anatomy and physiology and focuses on the integumentary, musculoskeletal, nervous, endocrine, and respiratory systems. **Part II** covers the lymphatic, gastro-intestinal, reproductive and urinary. Laboratory exercises are included in both courses. An understanding of the correlation between anatomical structure and physiological functions of the human body will provide a framework for sound clinical judgement in nursing practice.

Human Anatomy and Physiology II (NAPH1201)

Human Anatomy and Physiology II is a continuation of Human Anatomy and Physiology 1. The course examines the structure and function of the cardiovascular, lymphatic, digestive

(gastrointestinal), urinary, and reproductive systems. Laboratory exercises will allow the students to focus on the examination of selected parts of these systems through histological and skeletal preparations.

Medical Terminology (PTMT1101)

The Medical Terminology course is designed to instruct students in the basic knowledge of medical terms and also exposes students to the technical language of medicine and the human body parts, their functions and diseases. It will build vocabulary, consisting of pronunciation, spelling, meaning of root words, prefixes and suffixes. Overall students' ~~best~~ confidence and professional conduct will be improved. Knowledge will be gained from the history of the terms and application to on site experience. It sets in sequence prior knowledge that will apply to other courses in the programme.

Pharmacy Calculations I (PTPC1101)

This course instructs students in the basic knowledge of pharmacy calculation, principles of ratio and proportion dosage calculations, metric, avoirdupois, and apothecary systems of measurement and abbreviations used in pharmacy practice. The course includes operations and applications of ratios, proportions, fractions and decimals, percent, concentrations, and patient-specific doses. Topics include basic math, ratio, and proportion, dimensional analysis, and interpreting and transcribing prescriptions. At the end of this course, students should be able to perform correctly the calculations required to prepare a medication order properly.

Pharmacy Calculations II (PTPC1201)

This course is a continuation of Pharmacy Calculation I, students will develop competencies pharmaceutical calculations and problem-solving skills applicable to pharmacy practice. Scope primarily includes computations related to prescriptions and medication orders. At the end of this course, students should be able to perform correctly the calculations required to prepare a medication order properly.

Pharmacy Dispensing Theory (PTDT2201)

This course introduces dosage forms and dispensing theory and prepares students in Dispensing Labs, including interpreting the prescription, learning, and translating Latin abbreviations, calculating prescription quantities and dose calculations. These topics will be related to skills that will be explained and practiced utilizing textbooks and other resources. The learners will understand how to employ their roles in the dispensing unit and the legality of dispensing medication. They will study the various dosage forms, their characteristics, and their use in patients.

Pharmacy Dispensing Lab (PTDL2201)

This course will familiarise the basic concepts in pharmacy dispensing laboratory bases on the theoretical aspect of pharmacy dispensing. The student should be able to measure and compound medication and know the different tools and equipment used in a pharmacy. Understand how to mix two ointments and a lotion, mix to cream, and convert tablets into suspension. You will observe the use of excipients in compounds and determine the effect of adapting compound formulation records. Students will learn how using the aseptic technique in sterile product preparation is a critical component of safe pharmaceutical care. You will learn the principle that is involved in formulating medications under aseptic conditions.

Pharmacy Informatics and Technology (PTIT1201)

Pharmacy Informatics deals with data generated by the software used in patient care, which encompasses the management of information systems to guarantee patient well-being and optimal medical outcomes, data storage, and data retrieval as meaningful clinical reports. Overall, Pharmacy Informatics is the use of technology to ensure patients care and safety.

Pharmacy Operations and Maintenance (PTPO1101)

This module is designed to introduce students to the operations and maintenance of a pharmacy and provide students with a working knowledge of its structural, functions, business, and inter-relational aspects within the healthcare systems. The aim is to enable students to analyze the importance of their roles and responsibility as a Pharmacy Technician to assists the Pharmacist. Students should discuss the difference between pharmacy settings, examine the business application and operation, the storage and control medication and other devices and medical supplies for use by the patients. The student should know how to handle medication safely and the steps involved in preventing error.

Pharmaceutics (PTPC2104)

Pharmaceutics is a discipline which provides foundations in drug formulation and compounding of various dosage forms of drugs for dispensing by the Pharmacist. The Pharmacy Technician will be trained in the preparation of these various dosage forms-powders, solutions, suspensions, tablets, capsules, and aerosols. This course will outline concepts such as quality assurance, good manufacturing practice, size reduction, mixing, metrology and factors influencing chemical and physical stability and incompatibility of drug formulations.

Pharmacology I (PTPH1201)

This course applies the foundation of pharmacology. It explores a deeper level of analysis at the chemical, molecular and cellular properties of drugs, their mode of action and as therapeutic agents

how pharmaceutical products are used to treat conditions and heal the body. The various principles of treatment will also be developed in this course. Students will learn about different disease states and proper pharmacotherapy classified according to each body system and how these pharmaceuticals affect the various cells, organs and tissues in the body.

Research Methodology (RMTD3401)

This course will help the learner to choose research topics carefully and to use their research skills to enhance the world and its inhabitants. The learners will be exposed to scientific means of collecting and presenting data. Thus, the course will include research questions, hypothesis testing, questionnaire, observation techniques, descriptive statistics etc.

11. PROGRAMME STRUCTURE

Associate of Science in Pharmacy Technician (FULL TIME)

YEAR 1

Semester I

CODE	COURSE	THEORY/ PRACTICAL	CREDIT (HOURS)
COMM1101	Communication I	THEORY	3 (45)
PTMT1101	Medical Terminology	THEORY	3 (45)
NAPH1101	Human Anatomy and Physiology I	2 THEORY 1 PRACTICAL	3 (75)
PTDB1101	Diseases of Human Body	THEORY	3 (45)
MATH0001	Foundation Concepts in Mathematics I	THEORY	3 (45)
PTPC1101	Pharmacy Calculations I	THEORY	3 (45)
Total			18 (300)

Semester II

CODE	COURSE	THEORY/ PRACTICAL	CREDIT (HOURS)
PTPH1201	Pharmacology I	THEORY	3 (45)
PTPC1201	Pharmacy Calculations II 1963	THEORY	3 (45)
ITEC1104	Fundamentals of Information Technology	2 THEORY 1 PRACTICAL	3 (75)
PTIT1201	Pharmacy Informatics and Technology	THEORY	3 (45)
PTPO1101	Pharmacy Operations and Maintenance	THEORY	3 (45)
Total			15 (225)

YEAR 2**Semester III**

CODE	COURSE	THEORY/ PRACTICAL	CREDIT (HOURS)
NAPH1201	Human Anatomy and Physiology II	2 THEORY 1 PRACTICAL	3 (75)
PTPC2104	Pharmaceutics	2 THEORY 2 PRACTICAL	4 (120)
RMTD3401	Research Methodology	THEORY	3 (45)
PTLE2201	Healthcare Law and Ethics	THEORY	3 (45)
NHIN1101	ELECTIVE Health Informatics	THEORY	3 (45)
Total			15 (330)

Semester IV

CODE	COURSE	THEORY/ PRACTICAL	CREDIT (HOURS)
PTDL2201	Pharmacy Dispensing Lab	PRACTICAL	3 (135)
PTDT2201	Pharmacy Dispensing Theory	THEORY	3 (45)
PSYC1111	Introduction to Psychology I	THEORY	3 (45)
PTCM2201	Administrative Care Management	THEORY	3 (45)
Total			12 (270)

Summer I

CODE	COURSE	THEORY/ PRACTICAL	CREDIT (HOURS)
PTFP2301	Field Practicum	Practical	6 (270)
Total			6 (270)

total credits = 69

total hours = 1395

12. Programme Requirements

Institutions seeking to offer this programme will have to demonstrate that they satisfy the minimum programme requirements indicated in the table below.

#	PREPARATORY PROGRAMME REQUIREMENTS FOR IMPLEMENTATION
1	Required Facilities - Equipped Computer lab - Equipped Skills training lab - Adequate Classroom(s) - Adequate Internet Access - Equipped SEN facilities, with respect to target group - Consider flexible learning options, where possible
2	Learning/Training Resources Requirements (<i>Please indicate</i>) - Investigate the availability of curriculum, Learner guide, Facilitator's manual - Investigate the availability of Library materials - Investigate the availability of multimedia content - Investigate the availability of repurposed content for flexible learning - Investigate the availability of repurposed content for SEN
3	Required training Equipment/Tools/Software/Hardware - Determine the delivery material requirements (e.g. Electrical wires) - Determine the required computer software/hardware - Determine the required tools/equipment - Determine the required online simulation resources, if applicable - Determine the required assistive technologies based on specific SEN
4	Human Resources Requirements - Determine adequacy of skill Instructors - Determine the Instructor qualification requirements - Determine the need for Lab Assistants - Determine the required Assessors - Determine the need for additional tutors to support flexible learning modality (if required) - Determine the need for trained Instructor to support selected SEN groups
5	Required Assessment Strategies to be Approved with accrediting body - Determine the requirements for traditional assessment modes - Determine the requirements for Blended / flexible Assessment modes - Determine the requirements for Special Education Needs assessment strategies
6	Required Delivery Modality - Determine the requirements for flexible learning/ Blended (Developed content) - Determine the requirements for Face to Face (Developed delivery content) - Determine the requirements for SEN Modified Delivery Content
7	Required Programme Budget/Costs/Fees - Calculate Programme delivery costs - Calculate Student/Trainee fees - Other costs

19. References

- Allen, C., & Harper, V. (2014). *Laboratory manual for anatomy & physiology* (5th ed.). Somerset, New York: John Wiley & Sons.
- Arthur, J., Winfield, A. J., & Richards, R.M. E (2004). *Pharmaceutical practice* by: Churchill Livingstone.
- Bachenheimer, B.S. (2019). *Manual for Pharmacy Technicians* 5th Ed. American Society of Health System Pharmacists, Inc.
- Barrett, I. (2000). *Administrative Principles and Practices*. University of the West Indies, Jamaica.
- Boxhill, I., Chambers, C., & Wint, E. (1997). *Introduction to Social Research, with applications to the Caribbean*. Jamaica: Canoe Press.
- Colbert, B.J., & Woodrow, R. (2019). *Essentials of Pharmacology for Health Professionals* 8th ed. Cengage Learning.
- Davis, K., & Guerra, A. (2019). *Mosby's Pharmacy Technician: Principles and Practise* Elsevier.
- Edge, R.S., and Groves, J.R., (2018). *Ethics of Health Care: A Guide for Clinical Practice* 4th Edition.
- Evans, A. R, Martin, K. & Poatsy, M.A., *Technology in Action Complete*. (latest edition). Prentice Hall
- Ferreira, E. J., Erasmus, A. W., & Groenewald, D. (2010). *Administrative Management* 2nd ed. Groenewald Juta and Company Ltd.
- Goyal, A.K. *Textbook Of Pharmaceutical Dispensing* 1st Edition

Hebda, T., Mascara, C., & Czar, P. (2013). *Handbook of informatics for nurses and health care professionals*. Upper Saddle River, New Jersey: Prentice Hall Professional Technical Publishers.

Howard, C., Ansel, H., Allen, L.V., & Popovich, N.G (2005). *Pharmaceutical Dosage Forms and Drug Delivery systems* Lippincott Williams & Wilkins, 2005.

Jones and Bartlett, Sudbury, M.A. *Microsoft Office Word 2007: Exam 77-601, Microsoft Official Academic Course, Microsoft Corporation*. Somerset, New Jersey: John Wiley & Sons. ISBN: 978-0-470-06948-6.

LaBerta, C. *Computers Are Your Future, Introductory, 12/E*. Prentice Hall

Leedy, P., & Ormrod, J. E. (2005). *Practical Research Planning and Design* (latest edition). NJ: Prentice Hall.

Marriott, J.F., Wilson, K.A., Langley, C.A., & Belcher, D. *Pharmaceutical Compounding and Dispensing*. 2nd Ed. Pharmaceutical Press; 2010.

McGonigle, D., & Mastrian, K. (2012). *Nursing informatics and the foundation of knowledge*.

Microsoft Office Excel 2007: Exam 77-602, *Microsoft Official Academic Course, Microsoft Corporation*. Somerset, New Jersey: John Wiley & Sons. ISBN: 978-0-470-06949-3.

Microsoft Office PowerPoint 2007: Exam 77-603, *Microsoft Official Academic Course, Microsoft Corporation*. Somerset, New Jersey: John Wiley & Sons.

ISBN: 978-0-470-06951-6.

Neighbors, M., & Tannehill-Jones, R. (2018). *Human Diseases* (5th ed.). Cengage Learning.

- Neighbors, M., & Tannehill-Jones, R. (2018). *Workbook to Accompany Human Diseases* (5th ed.). Cengage Learning.
- Pandit, S. B., & Pandit, R.B. (2021.) *Nursing Administration and Management A Practical Approach* Paperback Paras Medical Publisher.
- Rathus, S. A. (2002). *Essentials of psychology*. (7th ed.). FL: Harcourt Publishing.
- Robbins, S.P., & DeCenzo, D. A. (2008). *Fundamental of Management* (6th Ed) NJ: Prentice Hall.
- Salkind, N. J. (2008). *Exploring Research* (latest edition). NJ: Prentice Hall.
- Shelly G., Cashman T., &Vermaat M. *Microsoft Office 2007: introductory*. KY: Course Technology Publishing.
- Shelly G., Cashman T., &Vermaat M. *Microsoft Office 2010: introductory*. KY: Course Technology Publishing.
- Shelly G.B., & Cashman, T.J. (2012). *Discovering computers 2012*. Complete Shelly Cashman Series. KY: Course Technology Publishing.
- Stuhan, M.A. (2012). *Understanding Pharmacology for Pharmacy Technicians* American Society of Health-System Pharmacists.
- Tortora, G. J., & Derrickson, B. H. (2013/2014). *Introduction to the human body: The essentials of anatomy and physiology* (10th ed.). New York: John Wiley & Sons, Inc.
- Wade, C. & Tavis, C. (2010). *Psychology* (10th ed). Upper New Saddle, NJ: Pearson Education.
- Wojcik, B.J. *Pharmacy Calculations for Pharmacy Technicians*, PharmD

COURSE OUTLINES

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME: MEDICAL TERMINOLOGY

COURSE CODE: PTMT1101

CREDITS: 3

CONTACT HOURS: 45 (Theory)

PRE-REQUISITE(S): None

CO-REQUISITE(S): None

SEMESTER: 1

COURSE RATIONALE:

The role of the pharmacy technician is one where he or she interfaces with many other medicinal professionals such as; doctors, nurses, medical representatives, etc. These persons must therefore be able to relate efficiently to the vernacular of medicine. Misconceptions can also be eroded when there is clear understanding of terms.

COURSE DESCRIPTION:

The Medical Terminology course is designed to instruct students in the basic knowledge of medical terms and also exposes students to the technical language of medicine and the human body parts, their functions and diseases. It will build vocabulary, consisting of pronunciation, spelling, meaning of root words, prefixes and suffixes. Overall students' ~~best~~ confidence and professional conduct will be improved. Knowledge will be gained from the history of the terms and application to on site experience. It sets in sequence prior knowledge that will apply to other courses in the programme.

COURSE OUTCOMES:

Upon successful completion of the course, the learner will be able to:

1. outline the history and principles associated with medical terminology.
2. differentiate between common and scientific terms in Pharmacology.
3. explore the various ways in which data can be presented.
4. demonstrate use of terms in oral and written forms.

UNIT 1: HISTORY OF MEDICAL TERMINOLOGY

(9 hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. examine the basic principles of Philology.
2. explain the root and structure of words.
3. identify the historical factors associated with medical terminology.
4. interpret data and simplify medical terms to patients.

Content:

1. Phonetics
2. Phonology
3. Morphology
4. Syntax
5. Semantics
6. Pragmatics

UNIT II: THE CONSTRUCT OF SCIENTIFIC NAMES

(12 hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. identify the components of scientific names.
2. outline the principles of drug classification.
3. compare the generic names to trade names.

Content:

1. Drug Classification
2. Generic name
3. Trade name
4. Medical word components

UNIT III: CONTEXTUAL USE OF MEDICAL TERMINOLOGY

(12 hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. describe the contexts in which medical terminologies can be used.
2. identify prefixes and suffixes of various terms.
3. interpret prefixes and suffixes of various terms.
4. explain the acronyms and abbreviations commonly used.
5. apply the use of terms in professional contexts.

Content:

1. Diagnosis Terminology
2. Treatment Terminology
3. Physical assessment Terminology
4. Medical Laboratory Terminology
5. Dosage Terminology

UNIT IV: PRESENTATION OF INFORMATION

(12 hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. outline the basic forms for presenting terminologies.
2. analyze the readability of health-related materials.
3. interpret information presented in medication fact sheets.
4. prepare reports with use of knowledge gained.

Content:

1. Videos
2. Comics
3. Infographic
4. Speeches
5. Reports

6. Labels
7. Posters
8. Leaflets

METHODS OF DELIVERY:

1. Lectures
2. Discussions
3. Role Play
4. Case Study Analysis
5. Field Trips
6. Presentation
7. Research
8. Project
9. Simulation

METHODS OF ASSESSMENT AND EVALUATION: 100% Continuous Assessment

- | | |
|-----------------------|-----|
| 1. Common coursework: | |
| Oral Assignment | 10% |
| Written Assignment | 15% |
| 2. Presentation | 25% |
| 3. Final project | 50% |

RESOURCE MATERIALS:

Bachenheimer, B.S. (2019). *Manual for Pharmacy Technicians* 5th Ed. American Society of Health System Pharmacists, Inc.

Davis, K., & Guerra, A. (2019). *Mosby's Pharmacy Technician: Principles and Practise* Elsevier.

Website

Ebscohost Databases – <http://www.ebscohost.com>

ProQuest Databases – <http://www.proquest.com>

Springer e-books – <http://www.springer.com>

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:	DISEASES OF THE HUMAN BODY
COURSE CODE:	PTDB1101
CREDITS:	3
CONTACT HOURS:	45 (Theory)
PRE-REQUISITE(S):	None
CO-REQUISITE(S):	PTMT1101 - Medical Terminology NAPH1101 - Human Anatomy and Physiology I
SEMESTER:	1

COURSE RATIONALE:

The role of the Pharmacy Technician has become increasingly essential to the effective functioning of the pharmacy team. The Pharmacy Technician plays a critical role as team player with pharmacists and other health care workers to provide safe, optimal care to patients seeking medications and other health-care products for their medical concerns. As such, knowledge of the different diseases that affect humans, their causes, diagnoses, and treatment is important in the training of the Pharmacy Technician.

COURSE DESCRIPTION:

This course will provide students with a comprehensive look at diseases and disorders that affect the human body. Students will learn important concepts related to human diseases such as terminology used and mechanisms of disease. The causes, diagnoses, and treatment for human diseases will be presented according to the major systems of the body. Common diseases will be analysed in greater detail, including signs and symptoms and prevention.

COURSE OUTCOMES:

Upon successful completion of this course, students will be able to:

1. define terminologies used in reference to human diseases.
2. describe the causes, symptoms, diagnoses, treatment, and prevention of diseases and disorders affecting the major systems of the human body.
3. identify microorganisms that cause diseases.

4. explain the body's defense mechanism against infection and invasion.
5. explain the processes of aging, cellular adaptation, and death.
6. identify signs, symptoms and management of common developmental and genetic, childhood, and mental health diseases and disorders.

UNIT I: CONCEPTS OF HUMAN DISEASE

(8 HOURS)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. memorize terminologies used in the study of human diseases.
2. identify common microorganisms that cause diseases.
3. indicate how to test for microorganisms for in a laboratory.
4. outline common diseases, disorders, syndromes, aetiologies, pathogeneses, diagnoses, prognoses
5. describe the six (6) causes of disease.
6. explain the processes of aging and death.
7. explain how neoplasms are classified.
8. explain how cancer develops and progresses.
9. outline the process of cell death.
10. summarize the process of inflammation and tissue repair.
11. describe how the body defends itself against infection and invasion.
12. outline the signs and symptoms, diagnosis, treatment, and prevention of cancer.

Content:

- 1) Introduction to human diseases with definition and discussion of:
 - a) Terminologies
 - b) Disease, disorder, and syndrome
 - c) Pathology
 - d) Pathogenesis
 - e) Etiology
 - f) Predisposing factors
 - i) Age
 - ii) Sex

- iii) Environment
 - iv) Lifestyle
 - v) Heredity
 - g) Diagnosis
 - h) Prognosis
 - i) Acute disease
 - ii) Chronic disease
 - iii) Complication
 - iv) Mortality rate
 - v) Survival rate
 - i) Treatment
 - j) Medical ethics
- 2) Identification and description of the mechanisms of disease – causes, aging, and death
 - a) Causes of disease
 - i) Heredity
 - ii) Trauma
 - iii) Inflammation and infection
 - iv) Hyperplasias and neoplasms
 - v) Nutritional imbalance
 - vi) Impaired immunity
 - b) Aging
 - c) Death
 - i) Cellular injury
 - ii) Cellular adaptation
 - iii) Cell and tissue death
 - iv) Organism death
- 3) Explanation and discussion of neoplasms
 - a) Terminology related to neoplasms and tumours
 - b) Classification of neoplasms
 - i) Appearance and growth pattern
 - Benign neoplasm
 - Malignant neoplasm
 - ii) Tissue of origin
 - c) Growth of benign and malignant neoplasms
 - d) Hyperplasias and neoplasms
 - e) Development of malignant neoplasms (Cancer)
 - f) Invasion by and metastasis of cancer
 - i) Lymphatic system metastasis
 - ii) Bloodstream metastasis
 - iii) Cavity metastasis
 - g) Grading and staging of cancer
 - h) Causes of cancer

- i) Chemical carcinogens
 - ii) Hormones
 - iii) Radiation
 - iv) Viruses
 - v) Genetic predisposition
 - vi) Personal risk behaviours
 - i) Cancer prevention
 - j) Frequency of cancer
 - k) Diagnosis of cancer
 - l) Signs and symptoms of cancer
 - i) Pain
 - ii) Obstruction
 - iii) Haemorrhage
 - iv) Anaemia
 - v) Fractures
 - vi) Infection
 - vii) Cachexia
 - m) Cancer treatment
 - i) Surgery
 - ii) Chemotherapy
 - iii) Radiation
 - iv) Hormone therapy
- 4) Inflammation and infection
- a) Defense mechanisms
 - i) Physical or surface barriers (non-specific)
 - ii) Inflammation (non-specific)
 - iii) Immune response (specific)
 - b) Inflammation
 - i) The inflammatory process
 - ii) Chronic inflammation
 - iii) Inflammatory exudates
 - iv) Inflammatory lesions
 - c) Tissue repair and healing
 - i) Tissue repair
 - ii) Tissue healing
 - iii) Delayed wound healing
 - iv) Complications of wound healing
 - d) Infection
 - i) Frequency and types of infection
 - Bacteria
 - Viruses
 - Fungi
 - Rickettsiae

- Protozoa
- Helminths
- ii) Testing for infection

UNIT II: COMMON DISEASES AND DISORDERS OF BODY SYSTEMS – PART I (12 HOURS)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain the basic anatomy and physiology, and development and management of common diseases and disorders of the immune system.
2. outline the basic anatomy and physiology, and development and management of common diseases and disorders of the musculoskeletal system.
3. outline the basic anatomy and physiology, and development and management of common diseases and disorders of blood and blood-forming organs.
4. outline the basic anatomy and physiology, and development and management of common diseases and disorders of the cardiovascular system.
5. outline the basic anatomy and physiology, and development and management of common diseases and disorders of the respiratory system.

Content:

- 1) Immune system diseases and disorders
 - a) Anatomy and physiology
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the immune system
 - i) Hypersensitivity disorders
 - ii) Autoimmune disorders
 - iii) Isoimmune disorders
 - iv) Immune deficiency disorders
 - e) Trauma
 - f) Rare diseases
 - i) Severe combined immunodeficiency disease (SCID)
 - g) Effects of aging on the immune system
- 2) Musculoskeletal system diseases and disorders
 - a) Anatomy and physiology

- b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the musculoskeletal system
 - i) Diseases of the bone
 - ii) Diseases of the joints
 - iii) Diseases of the muscles and connective tissue
 - iv) Neoplasms
 - e) Trauma
 - i) Fracture
 - ii) Strains and sprains
 - iii) Dislocations and subluxations
 - iv) Low back pain
 - v) Herniated nucleus pulposus
 - vi) Bursitis
 - vii) Tendonitis
 - viii) Carpal tunnel syndrome
 - ix) Plantar fasciitis
 - x) Torn rotor cuff
 - xi) Torn meniscus
 - xii) Cruciate ligament tears
 - xiii) Shin splints
 - f) Rare diseases
 - i) de Quervain's disease
 - ii) Tuberculosis of the bone
 - iii) Paget's disease
 - iv) Myasthenia gravis
 - g) Effects of aging on the system
- 3) Blood and blood-forming organs diseases and disorders
- a) Anatomy and physiology
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the blood and blood-forming organs
 - i) Disorders of red blood cells
 - ii) Disorders of white blood cells
 - iii) Disorders of platelets
 - e) Trauma
 - f) Rare diseases
 - i) Thalassemia
 - ii) Von Willebrand's disease
 - iii) Lymphosarcoma
 - g) Effects of aging on the system
- 4) Cardiovascular system diseases and disorders
- a) Anatomy and physiology
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the cardiovascular system
 - i) Diseases of the arteries
 - ii) Diseases of the heart
 - iii) Diseases of the veins

- e) Trauma
 - i) Haemorrhage
 - ii) Shock
 - f) Rare diseases
 - i) Malignant hypertension
 - ii) Cor pulmonale
 - iii) Raynaud's disease
 - iv) Buerger's disease
 - v) Polyarteritis nodosa
 - g) Effects of aging on the system
- 5) Respiratory system diseases and disorders
- a) Anatomy and physiology
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the respiratory system
 - i) Diseases of the upper respiratory tract
 - ii) Diseases of the bronchi and lungs
 - iii) Diseases of the pleura and chest
 - iv) Diseases of the cardiovascular and respiratory systems
 - e) Trauma
 - i) Pneumothorax and haemothorax
 - ii) Suffocation
 - f) Rare diseases
 - i) Pneumoconioses
 - ii) Fungal diseases
 - iii) Legionnaires' disease
 - g) Effects of aging on the system

UNIT III: COMMON DISEASES AND DISORDERS OF BODY SYSTEMS – PART II (12 HOURS)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. describe the basic anatomy and physiology, and development and management of common diseases and disorders of the lymphatic system.
2. describe the basic anatomy and physiology, and development and management of common diseases and disorders of the digestive system.
3. describe the basic anatomy and physiology, and development and management of common diseases and disorders associated with the liver, gallbladder, and pancreas.
4. describe basic anatomy and physiology, and development and management of common diseases and disorders of the urinary system.

5. describe the basic anatomy and physiology, and development and management of common diseases and disorders of the endocrine system.

Content:

- 1) Lymphatic system diseases and disorders
 - a) Anatomy and physiology
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the lymphatic system
 - i) Lymphadenitis
 - ii) Lymphangitis
 - iii) Lymphoedema
 - iv) Lymphoma
 - v) Mononucleosis
 - e) Rare diseases
 - i) Kawasaki disease
 - f) Effects of aging on the system
- 2) Digestive system diseases and disorders
 - a) Anatomy and physiology
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the digestive system
 - i) Diseases of the mouth
 - ii) Diseases of the throat and oesophagus
 - iii) Diseases of the stomach
 - iv) Diseases of the small intestine
 - v) Diseases of the colon
 - vi) Diseases of the rectum
 - e) Trauma
 - i) Trauma to the mouth
 - ii) Trauma to the stomach and intestines
 - f) Rare diseases
 - i) Achalasia
 - ii) Gluten-induced enteropathy
 - iii) Intestinal polyps
 - g) Effects of aging on the system
- 3) Liver, gallbladder, and pancreatic diseases and disorders
 - a) Anatomy and physiology
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the accessory organs of digestion
 - i) Liver diseases
 - ii) Gallbladder diseases
 - iii) Pancreatic diseases
 - e) Rare diseases
 - i) Primary biliary cirrhosis
 - ii) Gilbert's syndrome

- iii) Haemochromatosis
- f) Effects of aging on the system
- 4) Urinary system diseases and disorders
 - a) Anatomy and physiology
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the urinary system
 - i) Urinary tract infection (UTI)
 - ii) Diseases of the kidney
 - iii) Diseases of the bladder
 - e) Trauma
 - i) Straddle injuries
 - ii) Neurogenic bladder
 - f) Rare diseases
 - i) Goodpasture syndrome
 - ii) Interstitial cystitis
 - g) Effects of aging on the system
- 5) Endocrine system diseases and disorders
 - a) Anatomy and physiology
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the endocrine system
 - i) Pituitary gland diseases
 - ii) Thyroid gland diseases
 - iii) Parathyroid gland diseases
 - iv) Adrenal gland diseases
 - v) Pancreatic islets of Langerhans diseases
 - vi) Reproductive gland diseases
 - e) Trauma
 - f) Rare diseases
 - g) Effects of aging on the system

UNIT IV: COMMON DISEASES AND DISORDERS OF BODY SYSTEMS – PART III (7 HOURS)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. describe the basic anatomy and physiology, and development and management of common diseases and disorders of the nervous system.
2. describe the basic anatomy and physiology, and development and management of common diseases and disorders associated with the eye and ear.

3. describe basic anatomy and physiology, and development and management of common diseases and disorders of the reproductive system the reproductive system.
4. describe the basic anatomy and physiology, and development and management of common diseases and disorders of the integumentary system.

Content:

- 1) Nervous system diseases and disorders
 - a) Anatomy and physiology
 - i) The central nervous system
 - ii) The peripheral nervous system
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the nervous system
 - i) Infectious diseases
 - ii) Vascular disorders
 - iii) Functional disorders
 - iv) Dementias
 - v) Sleep disorders
 - vi) Tumours
 - e) Trauma
 - i) Concussions and contusions
 - ii) Skull fractures
 - iii) Epidurals subdural haematomas
 - iv) Spinal cord injury: quadriplegia and paraplegia
 - f) Rare diseases
 - i) Amyotrophic lateral sclerosis
 - ii) Guillain – Barré syndrome
 - iii) Huntington’s disease
 - iv) Multiple sclerosis
 - g) Effects of aging on the system
- 2) Eye and ear diseases and disorders
 - a) Anatomy and physiology
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the eye
 - i) Refractive errors
 - ii) Inflammation and infection
 - iii) Cataract
 - iv) Glaucoma
 - v) Nystagmus
 - vi) Strabismus
 - vii) Macular degeneration
 - viii) Diabetic retinopathy
 - ix) Colour blindness or colour vision deficiency
 - e) Common diseases of the ear
 - i) Infection

- ii) Deafness
 - iii) Motion sickness
 - f) Trauma
 - i) Corneal abrasion
 - ii) Retinal detachment
 - iii) Ruptured tympanic membrane
 - g) Rare diseases
 - i) Retinoblastoma
 - ii) Ménière's disease
 - iii) Otitis interna
 - h) Effects of aging on the system
- 3) Reproductive system diseases and disorders
 - a) Anatomy and physiology
 - i) Female anatomy and physiology
 - ii) Male anatomy and physiology
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the reproductive system
 - i) Female reproductive system diseases
 - ii) Diseases of the breast
 - iii) Disorders of pregnancy
 - iv) Male reproductive system diseases
 - v) Sexually transmitted diseases
 - vi) Sexual dysfunction
 - e) Trauma
 - i) Rape
 - f) Rare diseases
 - i) Vaginal cancer
 - ii) Puerperal sepsis
 - iii) Hydatidiform mole
 - g) Effects of aging on the system
- 4) Integumentary system diseases and disorders
 - a) Anatomy and physiology
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common diseases of the integumentary system
 - i) Infectious diseases
 - Viral diseases
 - Bacterial diseases
 - Fungal diseases
 - Parasitic diseases
 - ii) Metabolic diseases
 - iii) Hypersensitivity or immune diseases
 - iv) Idiopathic diseases
 - v) Benign tumours
 - vi) Premalignant and malignant tumours
 - vii) Abnormal pigmented lesions
 - viii) Diseases of the nails
 - ix) Diseases of the hair

- e) Trauma
 - i) Mechanical skin injury
 - ii) Thermal skin injury
 - iii) Electrical injury
 - iv) Radiation injury
 - v) Pressure injury
 - vi) Insect and spider bites and stings
- f) Rare diseases
 - i) Elephantiasis
- g) Effects of aging on the system

UNIT V: GENETIC AND DEVELOPMENTAL, CHILDHOOD, AND MENTAL HEALTH DISEASES AND DISORDERS (6 HOURS)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. identify common developmental and genetic disorders.
2. explain terminologies used to describe common developmental and genetic disorders.
3. describe signs and symptoms of common developmental and genetic disorders.
4. indicate diagnostic tests used in the management of common developmental and genetic disorders.
5. outline signs and symptoms of common diseases and disorders of childhood.
6. outline the management of common diseases and disorders of childhood.
7. distinguish between common mental health disorders in childhood.

Content:

- 1) Genetic and developmental diseases and disorders
 - a) Anatomy and physiology
 - b) Common signs and symptoms
 - c) Diagnostic tests
 - d) Common genetic and developmental disorders
 - i) Musculoskeletal
 - ii) Neurologic
 - iii) Cardiovascular
 - iv) Blood
 - v) Digestive
 - vi) Urinary
 - vii) Reproductive
 - viii) Other developmental disorders
 - ix) Multisystem diseases and disorders

- e) Trauma
 - i) Failure to thrive
 - ii) Fetal alcohol syndrome
 - iii) Congenital rubella syndrome
 - f) Rare diseases
 - i) Anencephaly
 - ii) Achondroplasia
 - iii) Tay-Sachs disease
- 2) Childhood diseases and disorders
- a) Infectious diseases
 - i) Viral diseases
 - ii) Bacterial diseases
 - iii) Fungal diseases
 - iv) Parasitic diseases
 - b) Respiratory diseases
 - i) Sudden unexpected infant death (SUID) and sudden infant death syndrome (SIDS)
 - ii) Croup
 - iii) Adenoid hyperplasia
 - iv) Asthma
 - v) Pneumonia
 - c) Digestive diseases
 - i) Fluid imbalances
 - ii) Food allergies
 - iii) Eating disorders
 - d) Cardiovascular diseases
 - e) Musculoskeletal diseases
 - i) Legg-Calvé-Perthes disease
 - ii) Ewing's sarcoma
 - f) Blood diseases
 - i) Leukaemia
 - g) Neurologic diseases
 - i) Reye's syndrome
 - h) Eye and ear diseases
 - i) Strabismus
 - ii) Deafness
 - i) Trauma
 - i) Child abuse
 - ii) Suicide
 - iii) Drug abuse
 - iv) Poisoning
- 3) Mental health diseases and disorders
- a) Common signs and symptoms
 - b) Diagnostic tests
 - c) Common mental health diseases and disorders
 - i) Developmental mental health disorders
 - ii) Substance-related mental disorders
 - iii) Organic mental disorders
 - iv) Psychosis
 - v) Mood or affective disorders

- vi) Dissociative disorders
- vii) Anxiety disorders
- viii) Somatoform disorders
- ix) Personality disorders
- x) Gender identity disorder
- xi) Sexual disorders
- xii) Sleep disorders
- d) Trauma
 - i) Grief
 - ii) Suicide
- e) Rare diseases
- f) Mental health disorders in the older adult

METHODS OF DELIVERY

1. Lectures
2. Presentations
3. Videos
4. Discussions
5. Case studies
6. Projects/Research
7. Group work
8. Field trips

METHODS OF ASSESSMENT AND EVALUATION

Assessment and evaluation will be on a continuous basis using a combination of methods as listed below.

1. Tests/Quizzes	15%
2. Assignments	20%
3. Project/Research paper	25%
4. Final examination	30%
5. Class participation	10%
	100%

Class participation will be evaluated based on students' involvement in discussions, case study analyses, and interaction through asking and answering questions.

The goal of the project/research paper is to evaluate students' understanding and interpretation of the content of the course such as causes of diseases, signs and symptoms, and the social and mental

impacts of disease. It will also help to develop critical research, writing, and presentation skills. The final project may be presented as a written document or oral presentation.

Some suggestions of possible research topics include:

1. Choose a disease or condition of public health significance and create an informational brochure or pamphlet for the public. Be sure to include signs, symptoms, diagnosis, etc.
2. Create a video/podcast to outline the mental, social and physical impact of the COVID-19 pandemic on patients with cancer.
3. Research a rare genetic disease and create a lesson for your class.
4. A friend was recently diagnosed with HIV and is being shunned by members in the community. They believe they could contract AIDS from your friend and are afraid as they think it is a death sentence. Prepare a presentation for a community meeting to address their fears, ensuring you distinguish between HIV and AIDS and address cause, transmission, treatment, prevention, etc.

RESOURCE MATERIALS

Required text

Neighbors, M., & Tannehill-Jones, R. (2018). *Human Diseases* (5th ed.). Cengage Learning.

Recommended text

Neighbors, M., & Tannehill-Jones, R. (2018). *Workbook to Accompany Human Diseases* (5th ed.). Cengage Learning.

Additional reading

For a more in-depth understanding of the drugs used in treating different diseases of the human body, read:

Colbert, B.J., & Woodrow, R. (2019). *Essentials of Pharmacology for Health Professionals* 8th ed. Cengage Learning.

Website

Ebscohost Databases – <http://www.ebscohost.com>
Springer e-books – <http://www.springer.com>
ProQuest Databases – <http://www.proquest.com>

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:	PHARMACY OPERATIONS AND MAINTENANCE
COURSE CODE:	PTPO1101
CREDITS:	3
CONTACT HOURS	45 Hours
PRE-REQUISITE(S):	None
CO-REQUISITE(S):	None
SEMESTER:	I

COURSE RATIONALE:

This course provides an appreciation for the accountability of the various pharmacy personnel within a pharmacy's operation. The Pharmacy Technicians must have a balanced inventory, the maintenance and operation of the Pharmacy to safely handle the supply and demand of medication.

COURSE DESCRIPTION:

This module is designed to introduce students to the operations and maintenance of a pharmacy and provide students with a working knowledge of its structural, functions, business, and inter-relational aspects within the healthcare systems. The aim is to enable students to analyze the importance of their roles and responsibility as a Pharmacy Technician to assist the Pharmacist. Students should discuss the difference between pharmacy settings, examine the business application and operation, the storage and control medication and other devices and medical supplies for use by the patients. The student should know how to handle medication safely and the steps involved in preventing error.

COURSE OUTCOMES:

On completion of the module, the students should be able to:

1. identify duties and some responsibilities required for the selection, storage, and control of medications and any other supplies to aid in the functioning of the Pharmacy.
2. apply the principles for maintaining standards to assure the quality, control, proper storage, and safe use of medications.
3. assess the importance of constant vigilance and records keeping to support all transactions.
4. describe the importance of reporting medication errors and the preventive measures taken to reduce them.

5. identify the brand and generic name and the therapeutic classification of preselected medications.
6. demonstrate basic duties involved in preparing medications for distribution, which include labeling and entering into the computer.
7. examine the organization, upkeep, and control of pharmacy inventory, including removing expired or recalled medications.

UNIT I: INTRODUCTION TO INVENTORY AND RECORDS KEEPING (6hrs)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain the various terminologies that are used in inventory and records keeping.
2. explain the management and maintenance of supplies.
3. explain how to determine the optimum quantity of pharmaceuticals to be ordered to meet demand.

Content:

1. Definitions of terms
 - a. Inventory
 - b. Records
 - c. including type
 - d. date range
 - e. format
 - f. volume
 - g. storage location
2. Terminologies
 - a. including the kind of record
 - b. date range
 - c. format
 - d. volume
 - e. storage location
3. Supplies department

UNIT II: INVENTORY CONTROL

(6hrs)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain what inventory control systems.
2. summarize an inventory management system is needed and its primary functions.
3. explain that stock management systems are needed to provide information on stocks and its condition.
4. outline the benefit and its importance of holding stocks
5. define the accepted procedures in inventory control of medications, equipment, and other medical devices.

Content:

1. Definitions
 - a. periodic inventory system.
 - b. perpetual inventory system.
 - c. inventory counting and management
2. List of Inventory System
 - a. PrimeRx
 - b. Winpharm pharmacy Management system
 - c. Quick books
3. Management system and why it's needed.
4. Benefits of holding stocks.
5. Control of stocks of pharmaceuticals.

UNIT III: PROCUREMENT OF PHARMACEUTICALS AND OTHER MEDICAL SUPPLIES

6 Hours

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain the importance of good communication at the different stages of the procurement cycle.

2. outline the importance of keeping and maintaining good records management.
3. explain the ideas of purchasing in groups.

Content:

1. Procurement cycle
 - a. Needs Recognition
 - b. Purchase Requisition
 - c. Requisition review
 - d. Solicitation process
 - e. Evaluation and contract
 - f. Order management
 - g. Invoice approvals and disputes
 - h. Record Keeping.
2. Records management
 - a. Prescription record
 - b. Hard copies and soft copies
 - i. name and address of patient
 - ii. patients date of birth
 - iii. name of medicine supplied
 - iv. quantity supplied
 - v. date of prescription and date dispensing
 - vi. reference number of prescription
 - vii. name and address of the prescriber.
 - c. Stock Record
 - i. name of drug
 - ii. company supplied
 - iii. date received
 - iv. expiration date for drugs
 - v. stock invoice from license dealer.
3. Purchasing in group.

UNIT IV: DISTRIBUTION OF PHARMACEUTICALS AND OTHER MEDICAL SUPPLIES

(7 hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain the roles and responsibilities of Pharmacy Technicians in the distribution cycle.
2. outline the importance of the activities which is carried out at all stages of the distribution cycle.
3. describe the importance of good communication at all stages of the distribution cycle.
4. explain the importance of maintaining good record keeping.

Content:

1. Distribution cycle
 - a. Drug Procurement
 - b. Port Clearing
 - c. Receipt and Inspection
 - d. Inventory control
 - e. Storage
 - f. Requisition of supply
 - g. Delivery
 - h. Dispensing to patient
 - i. Consumption report
2. Communication
 - a. Email
 - b. Memo
 - c. Telephone
3. Record keeping

UNIT V: PHARMACY AND STORE PROCEDURES

(6hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain the role of the storekeeper and his/her basic responsibility.
2. outline the overall maintenance and cleanliness of stock and the general environs.

3. explain the safety and security that govern the premises, stock, personnel and the custody of stocks and keys.

Content:

1. Storekeeper roles:
 - a. Maintain receipts records
 - b. Receive and shelve drugs
 - c. Inspect for damage or discrepancies
 - d. Alternate stock and organize the disposal of surpluses
 - e. acceptable record keeping, maintain inventory control
2. General cleanliness of stock area.
3. Safety and security of stock and personnel.

UNIT VI: STOCK-TAKING AND CONTROL

(6hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain the importance of managing the demand and supply of proper stock-taking to prevent overstocking or not having adequate stock.
2. explain the role of the Pharmacy Technician in stock control
3. explain the conditions for removing expired items and under what condition.

Content:

1. Stocks taking practices.
2. Roles of Pharmacy Technician.
3. The remove expired items.

UNIT VII: Record Keeping and management in Pharmacy

(6hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain the different types of records keeping that can be used in a pharmacy.

2. outline the procurement and inventory control system used in a pharmacy.
3. describe the difference factors that must be taken into consideration in the selection of procurement and inventory control.
4. apply the principles of effective communication for his/her needs for procurement and inventory system.
5. describe the use of current technology in the healthcare setting to ensure the safety and accuracy of dispense medication.
6. outline the importance of maintaining the confidentiality of patient information.

Content:

1. Types of records keeping within a pharmacy
 - a. Soft copies
 - b. Hardcopies
 - c. Chronological order
 - d. Alphabetical order
2. Inventory control system.
3. Principles of effective communication.
4. Technology to ensure safety and accuracy of medication.
5. Patient confidentiality.

METHODS OF DELIVERY:

1. Lecture
2. Discussions
3. Demonstrations
4. Group and individual projects

METHODS OF ASSESSMENT AND EVALUATION:

Course Work

- | | |
|------------------------|-----|
| 1. Test (two test 15%) | 30% |
| 2. Assignment | 20% |
| 3. Final exam | 50% |

RESOURCE MATERIALS:

None recommended; lecturer will provide material and other relevant information sources.

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:	PHARMACEUTICS
COURSE CODE:	PTPC2104
CREDITS:	4
CONTACT HOURS:	120 hours (2 Theory and 2 Practical)
PRE-REQUISITE(S):	PTPC1201 -Pharmaceutical Calculations
CO-REQUISITE(S):	None
SEMESTER:	2

COURSE RATIONALE:

This course is primarily designed to equip learners with the knowledge of pharmaceutical preparations, how to formulate extemporaneous products at industry standards to be safe, and stable. Learners will be introduced basic concepts and processes of manufacture, label writing for different dosage forms of drugs. It the aim of this course to enable to evaluate and demonstrate proficiency in pharmaceutical calculation and compounding of in accordance with the guidelines of the Pharmacy Act 1975 and under the supervision of a registered pharmacist.

COURSE DESCRIPTION

Pharmaceutics is a discipline which provides foundations in drug formulation and compounding of various dosage forms of drugs for dispensing by the Pharmacist. The Pharmacy Technician will be trained in the preparation of these various dosage forms-powders, solutions, suspensions, tablets, capsules, and aerosols. This course will outline concepts such as quality assurance, good manufacturing practice, size reduction, mixing, metrology and factors influencing chemical and physical stability and incompatibility of drug formulations.

COURSE OUTCOMES:

Upon successful completion of the course, the learner will be able to:

1. demonstrate proficiency in pharmaceutical calculations for use in calculating ingredients (active and excipients) for pharmaceutical preparations.

2. evaluate formula for drug compounding from medication orders and master formula.
3. describe fundamental principles of methods used in the conversion of pharmaceutical raw material (ingredients- active and excipients) into various dosage forms.
4. describe the importance of the study of physical properties of pharmaceutical dosage forms.
5. evaluate physical pharmacy principles, in the preparation and packaging of pharmaceutical products.
6. select equipment for compounding various dosage forms.
7. describe the principles of packaging technology in the proper selection of containers for pharmaceutical products.
8. apply the processes of packaging and storage of pharmaceutical products.
9. explain the term “Good Manufacturing Practice” in relation to the preparation and dispensing of a dosage form.
10. apply principles of “Good Manufacturing Practice” during the compounding of all pharmaceuticals.
11. demonstrate proficiency in formulating, compounding, and labelling extemporaneous pharmaceutical products.
12. explain the role of testing and quality assurance.
13. analyze the measurement techniques and their relation to the metric system.

UNIT 1: INTRODUCTION TO PHARMACEUTICS

(3 hours)

Learner Outcomes:

Upon successful completion of these unit, the learner will be able to:

1. define the term pharmaceuticals.
2. outline the parts of a prescription.
3. describe the legal requirement of a prescription.
4. outline types of dosage form and delivery systems.
5. distinguish between active ingredients and excipients.
6. differentiate between pharmaceutical manufacturing and extemporaneous compounding.

Content:

1. dosage forms and drug delivery systems.
2. the prescription- legal requirements etc.
3. manufacturing vs compounding including extemporaneous compounding.

UNIT II: EQUIPMENT AND OPERATIONS**4 Hours****Learner Outcomes:**

Upon successful completion of the unit, the learner will be able to:

1. identify the types of equipment used in the processing of pharmaceuticals
2. identify the equipment used in the production of pharmaceutical products.
3. select the appropriate equipment for the desired compounding and manufacturing processes.
4. describe the proper care and storage of pharmaceutical equipment.
5. value the techniques employed in preparing a dosage form.

Content

1. Types of equipment for weighing and measuring of ingredients when compounding and manufacturing of dosage forms.
2. Balances, scales, mortar and pestle, ointment tiles etc.
3. Manipulative techniques employed in compounding and manufacturing of dosage forms- e.g. grinding, sieving in size reduction, levigation and mixing.

UNIT III: PHARMACEUTICAL NECESSITIES**3 Hours****Learner Outcomes:**

Upon successful completion of the unit, the learner will be able to:

Students are informed of various entities required for the formulation of pharmaceutical products. To enable the student to:

1. interpret the structure of the periodic table.
2. differentiate between atoms and compounds.
3. define the mole and its relation to gaseous, liquids and solid mixtures.
4. differentiate between organic and inorganic compounds.
5. explain the nature of matter and its relation to measuring quantities.
6. define the terms active ingredients and excipients.

7. justify the role of excipients in drug preparations.
8. describe different types of mixtures.
9. illustrate the separation techniques of mixtures.
10. explain the various additives used in the preparation of pharmaceutical dosage forms.
11. correctly select the necessary ingredients for each dosage form.
12. solubility of ingredients.

Contents:

1. periodic table
2. active ingredients and excipients
3. organic and inorganic compound
4. types of mixtures
5. separation techniques
6. additives used in the preparation of solutions
7. ingredients required for the preparation of various dosage forms
 - a. antioxidants
 - b. buffers
 - c. stabilizers
 - d. flavourants
 - e. colourants
 - f. preservatives
 - g. pharmaceutical solvents and co-solvents

UNIT IV: INCOMPATIBILITIES**3 Hours****Learner Outcomes:**

Upon successful completion of the unit, the learner will be able to:

1. distinguish between the terms physical, chemical and therapeutic incompatibilities.
2. explain the mechanism of incompatibilities in products.
3. employ basic methods in mitigating physical, chemical, and therapeutic incompatibilities.
4. outline the importance of solubility of pharmaceutical ingredients in preparing liquid dosage forms to reduce incompatibilities.
5. use co-solvents to improve solubility of pharmaceutical ingredients.

Content

1. Types of physical, chemical and therapeutic incompatibilities and how they arise.

2. Methods that can be employed to reduce/prevent physical, chemical and therapeutic incompatibilities.
3. Solubility of ingredients.

UNIT V: POWDERS AND GRANULES

5 Hours

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. identify types of pharmaceutical powders and granules used in pharmacy practice.
2. outline the properties of powders and granules.
3. discuss the use of different powders and granules for internal applications in pharmacy practice.
4. summarize the advantages and disadvantages of powders and granules as dosage forms.
5. explain the steps in preparing powder and granule dosage forms.
6. describe the packaging, storage and labelling of powders to maintain stability of the products.
7. explain the problems associated with the preparation of powders and granules.

Content:

1. Types of powders and granules.
2. Routes of administration for powders and granules.
3. Preparation, packaging and labeling of powders and granules.
4. Advantages and disadvantages.
5. Storage and stability.

UNIT VI: SOLUTIONS & SUSPENSIONS

6 Hours

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. define the terms solutions and suspensions.
2. differentiate between solution and suspension as dosage forms.
3. describe types of solvents.
4. demonstrate the process of dilutions.
5. explain the importance of stability of solutions and suspensions.
6. recall the advantages pharmaceutical solutions and suspensions as dosage forms.
7. recall the disadvantages of pharmaceutical solutions and suspensions as dosage forms.
8. outline the pharmaceutical applications of solutions and suspensions.
9. summarize the route of administration of solutions and suspensions.
10. explain the inclusion of preservatives in the preparation of solutions and suspensions

11. explain the packaging and labeling requirements of solution and suspension dosage forms
12. identify the appropriate auxiliary labels for of solution and suspension dosage forms.

Content

1. Solution and suspension
2. Advantages & disadvantages of solutions and suspensions as dosage forms
3. Routes of administration of solutions and suspensions
4. Formulation, packaging and labeling requirements solutions and suspension
5. Storage and stability issues
6. Auxiliary labels- shake well

UNIT VII: EMULSIONS

4 Hours

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. describe the types of emulsions.
2. outline the methods of formulation of an emulsion and discuss the use of emulsifying agents.
3. explain the importance of the preservation of emulsions.
4. state the labeling and storage requirements to maintain stability of the emulsion.
5. explain the inclusion of preservatives in the preparation of emulsion.
6. explain the packaging and labeling requirements of emulsion.
7. identify the appropriate auxiliary labels for of emulsion.
8. outline mixing technique of formulations by phases (Oil Phase, Water Phase) to prevent cracking of an emulsion.

Content

1. Define emulsion
2. Routes of administration of emulsions
3. Preparation, packaging & labeling requirements for emulsions
4. Storage and stability issues
5. Advantages & disadvantages of emulsion as a dosage form
6. Mixing techniques- oil, water proportions

UNIT VIII: Suppositories and Pessaries

4 Hours

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain the types and use of suppositories and pessaries.
2. explain the routes of administration of suppositories and pessaries.
3. describe the formulation of suppositories and pessaries

4. state the packaging and labeling requirements of suppositories and pessaries.
5. outline the storage of suppositories and pessaries.
6. describe how to maintain stability of suppositories and pessaries.

Content

1. Define suppository and pessary.
2. Routes of administration for suppositories and pessaries.
3. Preparation, packaging & labeling of suppositories and pessaries.
4. Storage and stability issues.

UNIT IX: EXTERNAL PREPARATIONS**6 Hours****Learner Outcomes:**

Upon successful completion of the unit, the learner will be able to:

1. list the types of external preparations.
2. explain the use of each type in the delivery of drugs for both topical and systemic applications.
3. explain the appropriateness of particular dosage form for particular areas on the body.
4. justify the packaging, labeling and storage requirements for external preparation.
5. write a label for each dosage form, include the appropriate auxiliary label.

Content

1. Dosage forms of external preparations.
 - a. creams vs. ointments, pastes, gels
 - b. lotions, liniments
 - c. enema, douche
2. Delivery systems- topical and systemic.
3. Selection of medications for external use.
4. Appropriate use of medications for local and systemic effects.
5. Preparation, packaging and labeling requirements for medications used externally.
6. Storage and stability issues.

UNIT X: TABLETS & CAPSULES**5 Hours****Learner Outcomes:**

Upon successful completion of the unit, the learner will be able to:

1. outline the use of the tablet and capsule dosage form.
2. calculate the ingredients (powders) for preparing a tablet and capsules.
3. describe the production of tablets and capsules.

4. explain the type of coating available for tablets.
5. state the advantage and disadvantage of tablets and capsules as a dosage form.
6. explain the formulation and packaging of capsules including the selection of capsule shell.
7. write a label for tablets and capsules dosage form.
8. outline the proper storage of tablets and capsules.

Content

1. Tablet & capsule as dosage forms.
2. Types of tablets & capsules and their routes of administration.
3. Preparation/production, packaging, labeling of tablets and capsules.
4. Storage and stability issues.
5. Advantages & disadvantages.
6. label writing.

UNIT XI: AEROSOLS AND OTHER DOSAGE FORMS

3 Hours

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. list to components of an aerosol dosage form.
2. explain the functions of aerosol dosage form and its use in drug delivery.
3. summarize the advantages and disadvantages of the aerosol as a drug delivery systems.
4. explain the application of other dosage forms.
5. write a label for each dosage form, include the appropriate auxiliary label.

Content

1. Pharmaceutical aerosols.
2. Types of pressurized aerosols.
3. Routes of administration.
4. Preparation, packaging & labeling.
5. Stability and safety issues.
6. Dry powder aerosols (breath –actuated inhaler devices)
 - a. Advantages & disadvantages of dry powder
 - b. Functions
 - c. Stability & safety issues
7. Transdermal delivery systems:
 - a. Functions
 - b. Route of administration
 - c. Advantages & disadvantages

UNIT XII: PACKAGING FOR PHARMACEUTICAL PREPARATIONS 5 Hours

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. state the varying packaging needs as per formulation.
2. describe the preparation and maintenance of suitable storage conditions.
3. demonstrate the process of repackaging materials per formulations.
4. explain the functions of containers and closures.
5. describe the various types of packaging materials
6. outlined the advantages and disadvantages of the types packaging containers.
7. select the appropriate type of container for specific drug products.
8. determine the effect of heat and light on types of packages.

Content:

1. Dosage forms
2. Routes of Administration
3. Medication Delivery System
4. Bulk Packaging
5. Identify/define packaging and packaging materials
6. Containers- types and materials
7. Closures -types & materials
9. Selection of containers and closures
10. Advantages & disadvantages of various types of packaging material
11. Heat and light impact on packages

UNIT XII: OVERVIEW OF QUALITY CONTROL AND QUALITY ASSURANCE 3 Hours

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. state the difference between quality assurance and quality control
2. explain the term “Good Manufacturing Practice” (GMP)
3. explain the relevance of quality assurance service delivery.
4. relate to the framework for monitoring the use of various items.

Content

1. Define quality assurance (QA) and quality control (QC)
2. Explain the concepts and importance of QA and QC
3. QA and QC principles and guidelines
4. Explain the concept of “Good Manufacturing Practice” (GMP)
5. Importance of GMP
6. GMP guidelines
7. GMP monitoring

1. Definition of Quality
2. Location and International quality assurance standards ISO
3. Agility
4. Safety Standards
5. Regulatory and Quality Control

METHODS OF DELIVERY:

1. Lecturers
2. Demonstrations/group projects
3. Discussions
4. Whole group and small group discussion
5. Independent self-directed learning
6. Simulation
7. Case Study Analysis

METHODS OF ASSESSMENT AND EVALUATION: 100% Continuous Assessment

Common coursework:	50%
Assignment	10%
Test 1	15%
Test 2	15%
Lab work	20%
Professionalism (lab conduct)	5%
Final exam	50%

Overall Pass mark 60%

RESOURCE MATERIALS:

Arthur, J., Winfield, A. J., & Richards, R.M. E (2004). *Pharmaceutical practice* by:

Churchill Livingstone.

Bachenheimer, B.S. (2019). *Manual for Pharmacy Technicians* 5th Ed. American Society of Health System Pharmacists, Inc.

Davis, K., & Guerra, A. (2019). *Mosby's Pharmacy Technician: Principles and Practise* Elsevier.

Howard, C., Ansel, H., Allen, L.V., & Popovich, N.G (2005). *Pharmaceutical Dosage Forms and Drug Delivery systems* Lippincott Williams & Wilkins, 2005.

Stuhan, M.A. (2012). *Understanding Pharmacology for Pharmacy Technicians* American Society of Health-System Pharmacists.

Website

Ebscohost Databases – <http://www.ebscohost.com>

ProQuest Databases – <http://www.proquest.com>

Springer e-books – <http://www.springer.com>

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME: Pharmacy Calculation 1

COURSE CODE: PTPC1101

CREDITS: 3

CONTACT HOURS: (45 hours)

PRE-REQUISITE(S): Mathematics

CO-REQUISITE(S):

SEMESTER: II

COURSE RATIONALE:

The students will develop the skills necessary to perform precise calculations. Students will have an introduction to the fundamentals of pharmacy calculation, to appreciate the requisite skills needed as a Pharmacy Technician. They will apply mathematical principles to do the necessary calculations used in pharmaceutical manufacturing and parenteral solutions for paediatric and adult populations. Opportunities to practice and problem solve will be provided using practice exercises, self-tests, proficiency tests, and other support resources.

COURSE DESCRIPTION:

This course instructs students in the basic knowledge of pharmacy calculation, principles of ratio and proportion dosage calculations, metric, avoirdupois, and apothecary systems of measurement and abbreviations used in pharmacy practice. The course includes operations and applications of ratios, proportions, fractions and decimals, percent, concentrations, and patient-specific doses. Topics include basic math, ratio, and proportion, dimensional analysis, and interpreting and transcribing prescriptions. At the end of this course, students should be able to perform correctly the calculations required to prepare a medication order properly.

COURSE OUTCOMES:

1. execute conversions of measurement using the metric and apothecary systems.
2. explain problems including the following: ratio & proportion, fractions, and conversion of ratios to percentages.

3. perform dosage calculations including the following: calculating the number of doses, dispensing quantities, ingredient quantities, paediatric formulas body surface area, and day supply calculations.
4. calculate concentrations of mixtures (weight/weight, weight/volume, volume/weight, and volume/volume) and dilutions of stock solutions
5. demonstrate calculations with four methods of converting units of measurement.
6. calculate dosages/amounts to administer using correct notation and labelling.
7. identify medication administration errors and assess the accuracy of ordered and calculated medication dosages.
8. interpret drug labels, package directions, tables, charts, and graphs in order to administer medications correctly.

UNIT I: INTRODUCTION TO PHARMACY CALCULATION BASIC MATH (6hrs)

Learner Outcome:

Upon successful completion of this unit, learners will be able to:

1. distinguish between numbers and numerals.
2. express calculated values using the number system.
3. calculate using basic math equations.
4. list examples of integer, whole numbers, fraction, and decimal fractions.
5. name the place value of three digits to the left and the right of a decimal place.
6. demonstrate the conversion of Roman numerals to Arabic numerals up to 100 units of one and up to 1,000 units of 100's.

Content:

1. Difference between
 - a. Numeral and numbers
2. Use the decimal numbering system
 - a. Rational and real numbers
 - b. Place value
 - c. Rounding numbers

3. Calculation of whole numbers
 - a. Adding and subtracting
 - b. Multiplying and dividing
4. Fractions
 - a. Least common denominator
 - b. Reciprocal
 - i. Adding and Subtracting fraction
 - ii. Multiplying and Dividing fractions
 - iii. Convert fractions to decimals
5. Convert Roman Numerals to Arabic and Convert Arabic to Roman Numerals
 - a. SS (1/2), I (1), V (5), X (10), L (50), C (100), M (1000)

UNIT II: METRIC SYSTEM AND MEASURING

(6hrs)

Learner Outcome:

Upon successful completion of this unit, learners will be able to:

1. convert between units in the metric system.
2. identify the different symbols for apothecary and household weights and measures.
3. interpret the basic metric units for liquid and solid weights and measures.
4. identify the abbreviations for metric weights and measures.

Content:

1. System of measurement the metric unit: Micro (mc), Milli (m), Centi (c), Deci (d), Kilo (k).
 - a. Weight (mcg) (mg) (g (gram)) (kg)
 - b. Volume (mL) (dL) (L (liter))
 - c. Length: (mm) (cm) (m (meter)) (km)
 - d. Metric Prefixes Between 10^{18} and 10^{-18}
2. Apothecary/ Avoirdupois and household weights and measures.
 - a. Apothecary weight units: grain (gr)
 - b. Avoirdupois and Household weight: Ounce (oz), Pound (lb)
 - c. Apothecary Volume units: Fluidram/ fluid dram, fluid Ounce (fl oz)
 - d. Household Volume: Pint (pt), Teaspoonful (tsp), tablespoonful (tbs), Cup
3. Measurement for liquid and solid weights and measures.
 - a. Weight
 - b. Volume
 - c. Length
4. Perform calculations.
 - a. Doses and days supply- paediatric formulas

- b. Dispensing quantities
- c. Ingredient quantities -weight and volume
- d. Body surface area

UNIT III: UNIT CONVERSIONS

(9hrs)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. perform calculation to demonstrate conversion of different units.
2. perform calculation to demonstrate unit conversion between metric, household, and Apothecary system.
3. perform calculation to demonstrate unit conversion involving hours and minutes.
4. perform calculation to demonstrate unit conversion of temperature.

Content:

1. Basic unit conversion
 - a. dimensional analysis method
 - b. ratio and proportion method
2. Metric system conversion
 - a. dimensional analysis method
 - b. ratio and proportion method
3. Household system
 - a. dimensional analysis method
 - b. ratio and proportion method
4. Conversion between all units
 - a. dimensional analysis method
 - b. ratio and proportion method
5. Conversion Apothecary
 - a. dimensional analysis method
 - b. the ratio and proportion method
6. Converting Centi-grade to Fahrenheit
7. Converting Centi-grade to Fahrenheit
8. Converting Hours and minutes
 - a. decimal hours to hours and minutes
 - b. rule converting military time

UNIT IV: DIMENSIONAL ANALYSIS AND RATIO AND PROPORTION

(6hrs)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. calculate medication doses or quantities using common fractions, decimal fractions
2. explain how to solve common pharmaceutical problems using ratio and proportion, and dimensional analysis

Content:

1. Medication doses as a fraction
 - a. adding fraction
 - b. subtracting fraction
 - c. multiplication fraction
 - d. division fraction
 - e. convert fraction to decimal and percentage
2. Ratio and Proportion
3. Dimensional analysis
4. Rules of rounding numbers
5. Place holders
6. Significant figures
7. Adding significant figures rules

UNIT V: READING AND ANALYSING PRESCRIPTIONS

(9hrs)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. identify the required elements of a prescription.
2. recognize Latin abbreviation commonly used.
3. interpret information from prescriptions to create labels.
4. outline potential errors when reading a prescription.
5. create a label for selected medication.

Content

1. Elements of a prescription
 - a. Prescribers' Information
 - b. Prescribers' Information

- c. Drug (Rx) (strength, formulation, and quantity)
 - d. Signatura (Sig) (direction for use)
 - e. Dispensing Instructions (Disp)
 - f. Number of Refills (Rf)
 - g. Prescriber's Signature
2. Interpreting and transcribing prescription
- a. Latin and other medical abbreviation
 - b. Name of the patient
 - c. Name of pharmacy with address and phone number
 - d. Name of the prescriber (Dr. X)
 - e. Name and strength of drug including generic name and dosage form
 - f. Drug quantity
 - g. Directions for use
 - h. Date of initial dispensing of the drug
 - i. Number of refills available before a specified date
 - j. Expiration date
 - k. Description of the drug
3. Auxiliary information (example Take medication with a full glass of water Refrigerate and shake well, Take with food., for the nose)
4. Medication errors
- a. Dispensing an incorrect medication
 - b. Dosage strength/dosage form
 - c. Miscalculating a dose
 - d. Failing to identify drug interactions/contraindications.
 - e. Error-prone abbreviation
 - f. Medications that look alike sound alike, similar packaging

UNIT VI: Solving Problems with Critical Thinking

(7hrs)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

- 1. solve equations using addition and subtraction.
- 2. solve equations using multiplication and division.
- 3. identify the variable in the word problem.
- 4. translate word problems in the equation to solve mathematical problems.
- 5. estimate an answer and check the reasonableness when solving word problems.

Content:

1. Equation and unknown
2. Solving equation using
 - a. Addition
 - b. Subtraction
 - c. Multiplication
 - d. Division
3. Word problem

METHODS OF DELIVERY:

1. Lecture
2. Video presentation
3. Practice exercise
4. Quiz
5. Case Studies

METHODS OF ASSESSMENT AND EVALUATION:

Common coursework:

- | | |
|------------------|-------|
| a. Test | (10%) |
| b. In Class Quiz | (15%) |

College coursework:

- | | |
|---------------|-------|
| a. Assignment | (15%) |
|---------------|-------|

Final examination	(60%) industry standards
-------------------	--------------------------

Pass mark for coursework	60%
--------------------------	-----

Pass mark for final examination	60%
---------------------------------	-----

Overall pass mark	60%
-------------------	-----

RESOURCE MATERIALS:

Wojcik, B.J. *Pharmacy Calculations for Pharmacy Technicians*, PharmD

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:	PHARMACY DISPENSING THEORY
COURSE CODE:	PTDT2201
CREDITS:	3
CONTACT HOURS:	45 HRS
PRE-REQUISITE(S):	None
CO-REQUISITE(S):	PTPH 1201 -Pharmacology I PTPC 1101-Pharmaceutical Calculation I
SEMESTER:	II

COURSE RATIONALE:

Eliminating medication error is a critical to the practice of Pharmacy. In this course students are prepared to support safe medication practices in various settings and professionalized to consider patient medication safety as their responsibilities in the field. As an important component of effective healthcare delivery, this course will introduce Pharmacy Technicians to their roles and practice.

COURSE DESCRIPTION:

This course introduces dosage forms and dispensing theory and prepares students in Dispensing Labs, including interpreting the prescription, learning, and translating Latin abbreviations, calculating prescription quantities and dose calculations. These topics will be related to skills that will be explained and practiced utilizing textbooks and other resources. The learners will understand how to employ their roles in the dispensing unit and the legality of dispensing medication. They will study the various dosage forms, their characteristics, and their use in patients.

COURSE OUTCOMES:

Upon successful completion of this course, learners will be able to:

1. Review terminologies used in prescribing and dispensing.
2. explain procedures and operations relating to the packaging of medicines.
3. keep records of medicines.
4. compile a summary medical history of the case.

5. review the patients past Regimen History
6. identify treatment problems and recommend interventions they may consider necessary
7. transcribe a prescription that observes legal requirements.
8. assemble drugs to be dispensed according to the standards required for good dispensing practice
9. label drugs to be dispensed according to the standards required for good dispensing practice
10. understanding the billing and processing in pharmacy.

UNIT I: INTRODUCTION TO PHARMACY DISPENSING

8hrs

Learning outcome

Upon successful completion of the unit, the learner will be able to:

1. define the term dispensing
2. explain terminologies in dispensing.
3. describe dispensing practice.
4. identify prescription and non-prescription drugs.
5. outline the components of a prescription.
6. identify prescription errors.
7. perform simple calculations for drug doses and quantities.

Content:

1. Dispensing
 - a. Pharmacy dispensing
 - b. Non-pharmacy dispensing
 - c. Different containers (Bottles, jars, bags)
2. Dosage form
 - a. Compounding of solutions
 - b. Compounding of suspension
 - c. Emulsion
 - d. Powdered dosage forms
 - e. Capsuleslets (Tablet triturates) Molded tab
 - f. Ointments, Creams, Pastes, and Gels
 - g. Suppositories

3. Prescription and non-prescription drugs
4. Parts of a prescription
 - a. Prescribers' Information
 - b. Prescribers' Information
 - c. Drug (Rx) (strength, formulation, and quantity)
 - d. Signatura (Sig) (direction for use)
 - e. Dispensing Instructions (Disp)
 - f. Number of Refills (Rf)
 - g. Prescriber's Signature
5. Medication error
 - a. Wrong dose prescription/incorrect dose preparation
 - b. Omission
 - c. Unauthorized drug
 - d. Wrong time
 - e. Improper dose

UNIT II: ACTIONS AND USES OF COMMON MEDICINES

8 hours

Learner outcome:

Upon successful completion of the unit, the learner will be able to:

1. describe the key sources of crude and derived medicines.
2. explain the fundamental uses and actions of the commonly used medicine.
3. demonstrate an understanding of the essential drugs concept.
4. name common drugs used in the various body system.
5. apply the basic concepts of drug stability and expiration.

Content:

1. Crude and derived medicines.
 - a. Biosynthetic sources (genetically engineered drugs)
 - b. Semi-synthetic Sources
 - c. Synthetic/chemical derivative
 - d. Mineral sources
 - e. Marine source
 - f. Microbial sources
 - g. Plant source
 - h. Animal Source

2. Uses and actions of medicines.
 - a. preventing disease and injury
 - b. relieving pain and suffering
 - c. caring for and curing
 - d. avoiding premature death
3. Essential drug Concept
 - a. List of Essential Drugs by WHO in 1977
 - i. Drug name, Dosage forms, Dosage strength, Indications
 - ii. Availability within the context of functioning health systems
 - iii. Adequate amounts
 - iv. Appropriate dosage forms
 - v. Assured quality
 - vi. Adequate information
 - vii. Affordability
4. Medicines used in the various body system
 - a. Alimentary System
 - i. antacids antispasmodics
 - ii. purgatives
 - iii. adsorbents
 - iv. anti-diarrhea.
 - b. Cardiovascular System
 - i. antihypertensives (diuretic)
 - c. Respiratory System
 - Stimulants
 - i. drugs for managing asthma and other bronchial disorders
 - ii. expectorants
 - iii. cough suppressants
 - d. The Eye
 - Anti-inflammatory
 - i. anti-microbial eye reparations
 - e. The Nervous System
 - i. general and local anesthetics
 - ii. hypnotics
 - iii. sedatives
 - iv. tranquilizers
 - v. anticonvulsants
 - vi. analgesics
 - vii. antidepressant
5. Medication stability and expiration (temperature, light, humidity)

Learner outcome

Upon successful completion of the unit, the learner will be able to:

1. outline the roles of different pharmacy personnel.
2. outline the duties of a Pharmacy Technician when dispensing.
3. explain the legal grounds of distributing medications as a Pharmacy Technician.

Content:

1. Pharmacy personnel
 - a. Pharmacist
 - b. Pharmacy technicians
2. Regulation and Laws
 - a. Ethical Principles
 - b. Professional Practice Standards
 - c. Regulations
 - d. Pharmacy Act of Jamaica (section 19)

Learning outcome

Upon successful completion of the unit, the learner will be able to:

1. describe the process of ordering drugs.
2. observed frequently ordered drugs.
3. describe the appropriate storage areas for each drug.
4. explain the process of issuing drugs.

Content:

1. Ordering medication
 - a. The ordering intervals
 - b. The common drugs needed
 - c. records of frequently issued drugs (based on local and seasonal usage)
 - d. Completion of a drug requisition form
 - e. Calculation of the cost of the drugs ordered

2. Frequently ordered Drugs
 - a. Receipt of drugs
 - b. Keeping a record of drugs received
 - c. Complete record form for each item
 - d. Stacking drugs appropriately
3. Storage
 - a. Storage of mixtures (ointments, creams)
 - b. Circumstances governing storage
 - i. temperature
 - ii. heat
 - iii. light
 - c. Labelling of preparations for all purposes
 - d. First-In-First-Out (expiry dates)
 - e. Shelf-life (expired drugs)
4. Issuing Drugs
 - a. Filing of requisition (receipt)
 - b. Evaluating of requisition
 - c. Issuing of common drugs
 - d. Balancing inventory for each item

UNIT V: PROCESSING AND BILLING OF DURING DISPENSING

9HRS

Learner outcome

Upon successful completion of the unit, the learner will be able to:

1. explain essential certification in response to audits.
2. identify quality assurance certification required for compliance with government agencies.
3. explain the general pharmacy claims submission process.
4. identify methods for defining drug cost and sale prices.

Content:

1. Certification for auditing and quality assurance
 - a. Sales receipt
 - b. Patient File
 - c. Reimbursement submission
 - d. Claim forms
 - e. Inventory stock balance
 - f. Pharmacy Council Certificate of Registration of the Shop
 - g. Pharmacy Council Certificate of Registration of the Registering Pharmacist
 - h. Certificate of Business Registration -Registrar of Companies (if applicable)
 - i. Certificate/Articles of Incorporation and Articles/Memorandum of Association
 - j. TRN (Business)
 - k. Government-issued identification for all owners
 - l. Indication of operating hours
2. Claim submission essentials
 - a. Correct programme
 - b. Prescriber (name on prescription and drug bill must correspond)
 - c. Provider number for the location
 - d. Drug Quantity
 - e. Days supply
 - f. Beneficiary's Card
3. Drug cost and sale prices
 - a. Supply and Supply Chain
 - b. Competition
 - c. Drug Effectiveness
 - d. Reimbursement Formulation and Contract Pricing

METHODS OF DELIVERY:

1. Video presentation
2. Lectures
3. Case Studies
4. Discussion

METHODS OF ASSESSMENT AND EVALUATION:

Coursework	50% (overall pass mark 60%)
Test 1	15%
Test 2	20%
Presentation	15%
Final examination	50% (pass mark 60%)

RESOURCE MATERIALS:

1. Goyal, A.K. *Textbook of Pharmaceutical Dispensing* 1st Edition.
2. Guidelines for pharmacy profession NHF <https://www.nhf.org.jm/other-links/documents-forms1/provider-relations/17-guidelines-for-healthcare-professionals/file>
3. http://pharmacy.weebly.com/uploads/3/7/3/0/37303361/pharmaceutical_compounding_and_dispensing_second_edition.pdf

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME: PHARMACY INFORMATICS AND TECHNOLOGY

COURSE CODE: PTIT1201

CREDITS: 3

CONTACT HOURS: 45 HOURS

PRE-REQUISITE(S): None

CO-REQUISITE(S): None

SEMESTER: II

COURSE RATIONALE:

This course allows students to understand the use of modern technology being utilized in pharmacy practice. The course outlines the various aspects the supporting role of Pharmacy Informatics to medication management. It summarizes concepts of drug utilization review use of barcoding technology during product dispensing, and the development of alert systems to improve prescribing and dispensing of medications.

COURSE DESCRIPTION:

Pharmacy Informatics deals with data generated by the software used in patient care, which encompasses the management of information systems to guarantee patient well-being and optimal medical outcomes, data storage, and data retrieval as meaningful clinical reports. Overall, Pharmacy Informatics is the use of technology to ensure patients care and safety.

COURSE OUTCOMES:

Upon successful completion of this course, learners will be able to:

1. classify the technological mechanisms and communication points (interfaces) from a computerized pharmacy technology system.

2. analyze the challenges facing pharmacy informatics practice and the drivers for continued technological and clinical/administrative development.
3. apply knowledge of medical software systems to support the creation of informational reports, analyze data, and foster increased use of referential tools in pharmacy practice settings.
4. conduct basic pharmacy operations utilizing available technologies (software, hardware).
5. relate pharmacy informatics practice and capabilities to future changes and needs in the healthcare system, emphasizing safe medication practices.

UNIT I: INTRODUCTION TO INFORMATICS

(6 hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. define the term Pharmacy Informatics.
2. summarize the history of medical technology and the history of pharmacy technology.
3. justify the Who, What, and Why of Pharmacy Informatics.

Content:

1. Definition of Pharmacy informatics.
2. History of pharmacy Technology for the past 10 years or next 10 years.
 - a. changes in pharmacy technology
 - b. the significant changes in pharmacy technology
3. Pharmacy Technology
 - a. The challenges that are a result of the obstacles
 - b. Steps that were taken to tackle the obstacles

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. define basic terminologies used in pharmacy informatics.
2. describe information systems that are used in pharmacy practice.
3. role of the Pharmacy Technician in Informatics
4. explain the type of data collected, transmitted, and stored by the pharmacists.

Content:

1. Basic terms used in pharmacy informatics
 - a. Computerized Provider Order Entry (CPOE)
 - b. Rx Norm
 - c. Rx Norm
 - d. Standard Names, Strengths, And Dosage Forms For Clinical Drugs
 - e. Rx Norm
 - f. Communication Network
 - g. Cross-Industry Electronic Transmission
 - h. Rization Communication
 - i. Medication Prescription Drug Plan (PDP)
 - j. HER
 - k. Automated Dispensing Cabinets
2. Information systems that are used in pharmacy practice.
Pharmacy Software
 - a. Computer Choice- Pharmacy Works
 - b. Pharmpartner
 - c. Hugh Myrie & Associates
 - d. Pharmacy Information Management System (PIMS)
 - e. Automated Pharmacy
 - f. Telus
 - g. Other
3. The role of Pharmacy Technicians in pharmacy informatics.
 - a. Explain the roles of Pharmacy Technician in pharmacy informatics

4. Type of data collected, transmitted, and stored by the pharmacists.
 - a. Patient demographic information
 - b. Patient drug/medication
 - c. Patient insurance records
 - d. Patient diagnosis

UNIT III: TOOLS USED IN INFORMATICS

(6 hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. identify the essential component of a computer.
2. describe program development and computer components and functions.
3. describe standards and vocabularies, tables, MetaData, Relational DataBases, Queries.

Content:

1. Component of a computer and function:
 - a. The Computer Case
 - b. Motherboard
 - c. Central Processing Unit (CPU)
 - d. Ram, Hard Drive
 - e. Processor
 - f. Power Supply
 - g. Monitor
 - h. Keyboard Mouse.
2. Program development used for pharmacy informatics (software clinical decision support (CDS).
3. Automated Dispensing Units/Cabinet.
 - a. Prescription Drug Monitoring Programs (PDMP)
 - b. Medication Therapy Management (MTM)
 - c. Medication Reminder Devices
 - d. Information impacts health care and pharmacy
4. Identify the relationship between data, information, knowledge, and wisdom.

UNIT IV: CURRENT TECHNOLOGY IN HEALTHCARE THE SAFETY AND ACCURACY OF MEDICATION

(3 hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. outline how clinical technology impacts health care and pharmacy.
2. summarize how Pharmacy informatics supports ethical and legal pharmacy practice.
3. identify support networks for informatics used in the pharmacy.

Content:

1. Impact of technology on healthcare and pharmacy
 - a. Advantages and disadvantages
 - i Automation
 - ii Insurance tracking
 - iii Drug therapy monitoring
2. Ethical practice
 - a. Clients
 - b. Pharmacist
 - c. Other health professions
3. Network that provides
 - a. Efficiency
 - b. Efficacy
 - c. Safety

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain the benefits of implementing electronic health record (HER).
2. describe the ethical considerations in pharmacy informatics.
3. describe the role of our local setting in health technology.

Content:

1. Benefits of HER in pharmacy.
 - a. Providing accurate and complete information about patients
 - b. Quick access to patient records (efficient care)
 - c. Helping providers more effectively
 - d. Safe and reliable prescribing
 - e. Promote legible, complete documentation and accurate
 - f. Improve productivity and efficiency
2. Ethical consideration.
 - a. Patients' rights
 - b. Equity of resources
 - c. Patients' confidentiality
 - d. Patient safety
 - e. Conflict of interests
 - f. Dealing with the opposite sex
3. The strategic plan for e-Health technology in Jamaica.

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. describe Telehealth medicine.
2. explain the significance of Pharmacy informatics.

Content:

1. The future of telehealth.
 - a. Implications for Pharmacy Technicians
2. Pharmacy informatics.
 - a. Limitations of technology
 - b. Automation systems for drug procurement
 - a. Pharmacy inventory management
 - b. Prescribing medications
 - c. Ordering process
 - d. Barcoding
3. Distribution and dispensing of medications
 - a. Administering and documenting
 - b. Administration of medications
 - c. Drug monitoring

UNIT VIII: PHARMACY INFORMATICS: SYSTEM DEVELOPMENT LIFE CYCLE (3hrs)**Learner Outcomes:**

Upon successful completion of the unit, the learner will be able to:

1. define Systems Development Life Cycle (SDLC).
2. outline the five components of the SDLC.

Content:

Components:

- a. Planning
- b. Creating
 - i. Architecture
 - ii. Platforms
 - iii. Security.
 - iv. User Interface
 - v. Communication
 - vi. Programming
- c. Developing
- d. Testing

- e. Installing

UNIT IX: PATIENT SAFETY AND QUALITY IMPROVEMENT

(3hrs)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain how technology can impact community health and improve patient health outcome.
2. identify how the use of technology in pharmacy setting can promote patient safety.

Content:

1. Impacts
 - a. Medication errors
 - b. Adverse drug reactions
 - c. Compliance to practice guidelines
2. The impacts relating to patient safety
 - a. Electronic prescribing of controlled substances
 - b. Patient refills
 - c. Access to information
 - d. Communication with physician

UNIT X: THE FUTURE OF PHARMACY INFORMATICS

(5hrs)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. identify the challenges of technology to pharmacy informatics and dispensing medication.
2. map future Technologies that could impact healthcare and pharmacy informatics use.
3. practice pharmacy informatics in the workplace.

Content:

1. Challenges of technology to Pharmacy Informatics
 - a. access to needed medicines
 - b. barcoding
 - c. optimizing medicines use
 - d. reducing risk
2. Future technologies
 - a. Wearable
 - b. 3D Bio Printing
 - c. Robotics
 - d. Artificial Intelligence
 - e. Block-chain
3. Harmonization of practices
 - a. Clear communication
 - b. Clear data
 - c. Standardized mode of data collection

METHODS OF DELIVERY:

1. Lecture
2. Class discussion
3. Videos
4. Guest Speakers
5. Exam and quizzes

METHODS OF ASSESSMENT AND EVALUATION:

- | | |
|------------------------|-----|
| 1. Common coursework: | |
| a. Test | 25% |
| 2. College coursework: | |
| a. Project | 10% |
| b. Group Project | 25% |
| 3. Final examination | 40% |

RESOURCE MATERIALS:

[PHARMACY INFORMATICS PHARMACY INFORMATICS.pdf](#)

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME: PHARMACY CALCULATION II

COURSE CODE: PTPC2101

CREDITS: 3

CONTACT HOURS: (45 hours)

PRE-REQUISITE(S): Pharmacy Calculation I

CO-REQUISITE(S):

SEMESTER: III

COURSE RATIONALE:

Pharmaceutical calculation is the area of study that afford students to apply the basic principles of mathematics in pharmaceutical preparations. Students will interpret the written prescription, determine safe dosages and quantities to prepare and dispense for various routes of administration. Applying mathematical principles to do the necessary calculations used in pharmaceutical manufacturing and parenteral solutions for paediatric and adult populations; will be utilized. Opportunities to practice and problem solve will be provided using practice exercises, self-tests, proficiency tests, and other support resources.

COURSE DESCRIPTION:

This course is a continuation of Pharmacy Calculation I, students will develop competencies pharmaceutical calculations and problem-solving skills applicable to pharmacy practice. Scope primarily includes computations related to prescriptions and medication orders. At the end of this course, students should be able to perform correctly the calculations required to prepare a medication order properly.

COURSE OUTCOMES:

Upon successful completion of this course, learners will be able to:

1. use various methods to solve fundamental pharmacology problems.
2. demonstrate how to perform dilution and concentration calculations, including using the alligation method.
3. explain the types of situations in which the various types of calculations will be necessary.

4. understand how to calculate dosage based on the given scenario.
5. solve problems related to Alligation – combining two varying strengths of drugs to achieve the prescribed strength ordered.
6. perform calculations for flow rates for drops/min or ml/hour for infusion of IV medications
7. Perform calculation related to pharmacy business.

UNIT I: DOSAGE CALCULATION I

(9hrs)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. write mathematical ratio from written comparison statement.
2. convert ratio written as fractions.
3. identify the known concentration of a drug when given the medication label.
4. perform calculation for concentration of drugs.
5. express drug strength as concentration.
6. Solve equations with a variable using the ratio and proportion method.

Content:

1. Ratio
2. Drug strength
3. Concentration
4. Proportion equation

UNIT II : DOSAGE CALCULATION II

(6hrs)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. describe the equipment used in Dosage Measurement.
2. explain the difference between dose and dosage.
3. explain one-step pharmaceutical dosage calculations.

4. set up a sequence of ratios and proportions to solve a single dosage calculation.
5. determine what information is needed to solve for and calculate dosages correctly in addition to any given information.
6. convert paediatric weights from pounds to kilograms.
7. calculate accurately dosages based on mg/kg/day.
8. identify standard sig. codes used on prescriptions.

Content:

1. Equipment used in dosage measurement
 - a. calibrated spoons
 - b. droppers,
 - c. syringe
2. Dosage, Daily dose, divided dose, weight-base dose
 - a. Use mg/kg/day or mg(kg.day)
 - b. Mcg/kg/min or mcg(kg.min)
3. Dose calculation
 - a. Calculating the number of doses
 - b. Calculating the quantity to dispense
 - c. Calculating the quantity of ingredients
 - d. Calculating the correct days supply
4. Pediatric dosing
 - a. Calculating pediatric dosages using
 - b. Young's rule
 - c. Clark's rule
 - d. Fried's rule
5. Converting pediatric weight
 - a. From pounds to kg

UNIT III: PERCENT STRENGTH AND DILUTION

(9hrs)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. covert a ratio, a decimal, a decimal fraction to percent.

2. explain the terms; percent strength, weight in weight, weight in volume, volume -in – volume, parts per million.
3. explain how to determine a percent strength.
4. calculate the percent strength when two-volume of given strength of the same ingredient is combined.
5. use alligation method to solve problems.

Content:

1. Percent strength
 - a. percent weight in weight
 - b. percent weight in volume
 - c. percent volume-in-volume
 - d. milligram percent
 - e. part per million
2. Concentrated solution and dilution
3. Alligation method
 - a. Alligation with three compounds
 - b. Alligation grid

UNIT IV: COMPOUNDS AND FORMULAS

(6hrs)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. perform calculations necessary to reduce or enlarge a compounding formula.
2. recognize the sensitivity rating and expected percentage error.
3. define the minimum weighable quantity for pharmacy balance.
4. calculate the mass, volume, or density of compound.
5. determine the percent error when given the measured value and true value.
6. explain aliquots for measuring a small amount of drug.

Content:

1. Compound formulas
 - a. Reducing formulas
 - b. Enlarging formulas
2. Aliquots

3. Density and specific gravity
4. Percent error

UNIT V: INJECTABLE DRUGS AND IV INFUSIONS

(8hrs)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. determine the amount of drug is in a vial or bottle.
2. determine the volume of dry powder displaces and concentration of the drug when incorrectly reconstituted.
3. define milliequivalent (mEq), and millimole (mM).
4. convert a measurement from milliequivalent to milligram.
5. convert a measurement from millimole to milligram.
6. calculate the delivery time for a specified volume of fluid for a given infusion rate.

Content:

1. Reconstituting medication
2. Milliequivalent
3. Millimoles
4. Valence
5. Equivalent weight
6. Intravenous Infusion
 - a. Flow rate
 - b. Infusion Pump

UNIT VI: THE BUSINESS OF PHARMACY

(5hrs)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. calculate markup, gross profit net profit, and discount.
2. explain the average wholesale price and insurance reimbursement.

3. calculate annual depreciation of a long-term asset given the initial value, the disposal value, and the estimated life of the asset.
4. calculate inventory turnover.

Content:

1. Markup
 - a. Markup percentage
2. Gross profit
3. Net profit
4. Discount
5. Inventory
 - a. First in, first out
 - b. Last in first out
6. Depreciation

METHODS OF DELIVERY:

1. Lectures
2. Video presentation
3. Practice exercise
4. Quiz
5. Case Studies

METHODS OF ASSESSMENT AND EVALUATION:

Common coursework:

- | | |
|------------------|-------|
| a. Test | (15%) |
| b. In Class Quiz | (15%) |

College coursework:

- | | |
|---------------|-------|
| a. Assignment | (10%) |
|---------------|-------|

Final examination	(60%)
-------------------	-------

Pass mark for coursework	60%
Pass mark for final examination	60%
Overall pass mark	60%

RESOURCE MATERIALS:

Wojcik, B.J., (2018). *Pharmacy Calculations for Pharmacy Technicians* 1st Ed.,

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:	PHARMACY DISPENSING LAB
COURSE CODE:	PTDL2201
CREDITS:	3
CONTACT HOURS:	135 hrs
PRE-REQUISITE(S):	PTPH 1201 Pharmacology 1 PTPC 1201 Pharmaceutical Calculation 1
CO-REQUISITE(S):	PTPC 2101 Pharmaceutical Calculation II PTPH 2101 Pharmacology II
SEMESTER:	III

COURSE RATIONALE:

The lessons learned from the pre-requisite course have simulated the actual pharmacy dispensing preparation, as Technicians transition between the didactic coursework and later hands-on experiences. It promotes the student's aptitude to utilize professional knowledge to analyze and solve problems that occur in the areas of dispensing.

COURSE DESCRIPTION:

This course will familiarise the basic concepts in pharmacy dispensing laboratory bases on the theoretical aspect of pharmacy dispensing. The student should be able to measure and compound medication and know the different tools and equipment used in a pharmacy. Understand how to mix two ointments and a lotion, mix to cream, and convert tablets into suspension. You will observe the use of excipients in compounds and determine the effect of adapting compound formulation records. Students will learn how using the aseptic technique in sterile product preparation is a critical component of safe pharmaceutical care. You will learn the principle that is involved in formulating medications under aseptic conditions.

COURSE OUTCOMES:

Upon successful completion of this course, learners will be able to:

1. describe the equipment and devices common to the pharmacy dispensing lab.
2. describe the term "calibration" as it refers to the equipment commonly used in the pharmacy dispensing lab.
3. define the terms "sterile" and "non-sterile" in pharmacy.

4. define the term compounding and dispensing.
5. explain why some medications require compounding and the skill that is needed.
6. demonstrate how to compound non-sterile products using appropriate technique.
7. illustrate how to determine the accurate amounts of ingredients for a compounded product.
8. explain the importance of the types of containers and placing labels so that all information on all labels is visible.
9. explain the risks involved in the preparation and handling of cytotoxic and other hazardous medication products.
10. assist pharmacists in preparing, storing, and distributing medication products requiring special handling and documentation.
11. explain the importance of maintaining a clean and neat work environment.

UNIT I: ETHICAL CONDUCT

15 hours

Learner Outcome

Upon successful completion of this unit, learners will be able to:

1. present an image suitable for the profession of pharmacy.
2. demonstrate active and engaged listening skills.
3. communicate clearly and effectively.
4. demonstrate a respectful and professional attitude.
5. apply self-management skills.
6. apply interpersonal skills.
7. demonstrate problem-solving skills.

Content:

1. Appearance and behaviour.
2. Clear communication verbally and in writing.
3. Relate to diverse patient populations, colleagues, and professionals.
4. Self-management skills (time, stress, and change management).
5. Interpersonal skills including negotiation skills, conflict resolution, customer service, and teamwork.

6. Critical thinking

UNIT II: PHARMACY DISPENSING AND MANAGEMENT

30HRS

Learner outcome

Upon successful completion of the unit, the learner will be able to:

1. describe the appropriate dispensing practice.
2. apply skills of using the various tools and equipment in the pharmacy lab.
3. measure accurately quantities using digital balances and measuring cylinders.
4. demonstrate how to use and maintain the tools and equipment.
5. assist pharmacists in inventory management of medication products.
6. explain the importance of information management.
7. demonstrate knowledge of quality improvement and medication safety.

Content:

1. Good dispensing practices: Understanding.
 - a. the use of medication dispensed
 - b. common side effect
 - c. correct dosage
 - d. possible interaction with food and other medication
 - e. calculation skills
 - f. safe medication handling
 - g. safe disposal
2. Tools and equipment.
 - a. Tablet counting machine
 - b. Liquid dispensers
 - c. Autoclave
 - d. Balance
 - e. Measuring cylinders
3. Maintenance of tools and equipment.
 - a. Sanitization
 - b. Disinfecting
 - c. Sterilizing
 - d. Washing

4. Management of Information.
 - a. Storage and retrieval of all documents
 - b. Access references and resources for patient care
5. Safe medication management system and quality improvement.
 - a. Process for medication incident, detecting, recording, analyzing, correcting, and sharing lessons learned)
 - b. Report adverse reactions involving medications (prescription and non-prescription medications, natural health products)

UNIT III: INTRODUCTION TO TECHNIQUES IN DISPENSING AND COMPOUNDING

30hrs

Learner outcomes

Upon successful completion of the unit, the learner will be able to:

1. describe the types of pharmaceutical preparation.
2. demonstrate the correct procedure for the measuring of liquid and the weighing of solid.
3. explain the reasons for compounding.
4. describe the process and skills required for compounding.

Content:

1. Dosage form
 - a. Compounding of solutions
 - b. Compounding of suspension
 - c. Emulsion
 - d. Powdered dosage forms
 - e. Capsules (Tablet triturates)
 - f. Molded tab
 - g. Ointments, Creams, Pastes, and Gels
 - h. Suppositories
2. Measuring liquid and weighting solids
 - a. Appropriate strength
 - b. Dosage
 - c. Minimum weighable quantity(powders)

3. Techniques in compounding
 - a. Aseptic techniques
 - b. Non-Sterile

UNIT IV: BILLING OF PRESCRIPTION

30hrs

Learner outcome

Upon successful completion of the unit, the learner will be able to:

1. explain the various Billing categories.
2. explain the Billing process.
3. state the rationale for Pharmacy Reimbursement.

Content:

1. Categories
 - a. Cash
 - b. Private
 - c. Public
2. Billing Process
 - a. Receiving prescription
 - b. Gathering patients' information
 - c. Prescription data entry
 - d. Pharmacy Claim Process
 - e. Third-party adjudication
 - f. Point of sale
 - g. Payment
3. Reimbursement
 - a. Negotiated rate
 - b. Ingredients cost
 - c. Dispensing fees

UNIT V: PROCESSING AND HANDLING PRESCRIPTION

30HRS

Learner outcome

Upon successful completion of the unit, the learner will be able to:

1. receive, process, and prepare prescriptions orders for completeness, accuracy.

2. assist pharmacists in identifying patients who desire/require counselling to optimize the use of medications, equipment, and devices.
3. maintain proper documentation of prescriptions
4. ensure safe handling of medication.
5. prepare patient-specific medications for distribution.
6. prepare non-patient-specific medications for distribution.

Content:

1. Processing Prescription
 - a. Input & Initial Check
 - b. Therapeutic Check
 - c. Preparation
 - d. Technical Check
 - e. Supply and Educate
2. Drug distribution system
 - a. Ward-controlled system.
 - b. Pharmacy-controlled imprest-based system.
 - c. Pharmacy controlled patient issue system
3. Proper documentation of prescriptions
 - a. During dispensing
 - b. Prescription record
 - c. Electronic record-keeping
 - d. Keeping and producing
 - e. Disposing of old prescription
4. Safe handling of medication when dispensing (controlled substances, immunizations, chemotherapy)

METHODS OF DELIVERY:

Hands-on Training.

METHODS OF ASSESSMENT AND EVALUATION: continuous assessment

Test	10%
Test	15%
Laboratory	25%
Final Examination	(50%)
Pass mark for coursework	60%
Pass mark for final examination	60%
Overall pass mark	60%

RESOURCE MATERIALS:

Marriott, J.F., Wilson, K.A., Langley, C.A., & Belcher, D. *Pharmaceutical Compounding and Dispensing*. 2nd Ed. Pharmaceutical Press; 2010.

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:	PHARMACOLOGY I
COURSE CODE:	PTPC1201
CREDITS:	3
CONTACT HOURS:	45 (Theory)
PRE-REQUISITE(S):	NONE
CO-REQUISITE(S):	None
SEMESTER:	II

COURSE RATIONALE:

The understanding of Basic Pharmacology principles represents significant Biochemical theoretical underpinnings that are advanced in nature. It is therefore critical that subsequent to learning basic principles, exposure to higher levels of learning is achieved. Chemical makeup of formulation and absorption of drugs into the bloodstream is important to the effectiveness of treatment; this knowledge will help the Pharmacy Technician to carry out his/her duties more effectively.

COURSE DESCRIPTION:

This course applies the foundation of pharmacology. It explores a deeper level of analysis at the chemical, molecular and cellular properties of drugs, their mode of action and as therapeutic agents how pharmaceutical products are used to treat conditions and heal the body. The various principles of treatment will also be developed in this course. Students will learn about different disease states and proper pharmacotherapy classified according to each body system and how these pharmaceuticals affect the various cells, organs and tissues in the body.

COURSE OUTCOMES:

Upon successful completion of the course, the learner will be able to:

1. explain the history of Pharmacology.
2. describe the factors that affect therapeutic effects of dosage forms and formulation.
3. explain the impact of pharmacology on the health care systems.

4. relate health status to the efficacy of medication.
5. review alternative treatment practices.

UNIT 1: THE HISTORY OF PHARMACOLOGY

(2 hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. review ancient medicinal practices.
2. analyze the impact of culture in the history of therapeutic treatments.
3. compare traditional methods of treatment with modern medicine.

Content:

1. Ancient Herbs
2. Home remedies
3. Vaccine development

UNIT II: INTRODUCTION TO PHARMACOLOGY

(4 hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. outline the basic principles of pharmacology.
2. explain the term Biopharmaceutics, pharmacokinetics, and pharmacodynamics.
3. explains the terms agonist, antagonist, receptor, and receptor blockers.
4. describe the principles of the pharmacokinetics phase.
5. describe the principles of the pharmacodynamic phase.
6. classify drugs based on chemical structure and therapeutic action.
7. outline the concepts of half-life, bioavailability, tolerance, and pharmacogenetics.
8. explain terms such as adverse effects, side effects, indication and contraindications.
9. outline factors influencing therapeutic actions.

Content:

1. Drug Classification
2. Pharmacokinetics
 - a. Mechanisms of Drug Absorption
 - b. Absorption
 - c. Bioavailability
 - d. Metabolism
 - e. Excretion
3. Pharmacokinetics
 - a. Plasma Kinetics
 - b. Blood-Brain transport
4. Pharmacodynamics
 - a. Target Occupancy
 - b. Efficacy
5. Terminologies

UNIT III: ALTERNATIVE AND COMPLEMENTARY DRUG THERAPY (3 hours)**Learner Outcomes:**

Upon successful completion of the unit, the learner will be able to:

1. explain the relevance of non-conventional medicine treatment.
2. outline the history of alternative medicine and complementary treatment.
3. analyze the theoretical underpinnings of complementary and Alternative Medicine.
4. debate the advantages and disadvantages of alternative treatments.

Content:

1. Complementary and Alternative Medicine
 - a. Acupuncture
 - b. Aromatherapy
 - c. Homeotherapy
 - d. Naturopathy
 - e. Herbal Medicine
 - f. Sex dependent treatment

UNIT III: MAJOR BODY SYSTEMS AND PHARMACEUTICAL ACTIONS (20 hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. review the anatomy of the various systems.
2. outline the role of the major organ systems of the body.
3. outline the etiology of specific disease of the various systems.
4. describe the action of therapeutic agents on body systems.
5. classify drugs according to their therapeutic action.
6. outline side effects, adverse effects, and contraindication of selected drugs.
7. describe the mechanism of drugs used to treat conditions of the various systems.
8. recall indication of drugs used to treat conditions of the various systems.
9. identify alternate and complimentary medicines in the treatment of conditions of the various systems.

Content:

Conditions affecting and treatment of the:

- a. Gastrointestinal system
- b. Endocrine System
- c. Reproductive System
- d. Musculoskeletal System
- e. Cardiovascular System
- f. Renal System
- g. Reproductive System
- h. Immune System
- i. Respiratory System
- j. Gastrointestinal System.
- k. Nervous System
- l. Endocrine System
- m. Reproductive System
- n. Musculoskeletal System.
- o. Cardiovascular System

- p. Renal System.
- q. Immune System
- r. Respiratory System.

UNIT IV: ANTIINFECTIVE AGENTS

(10 hours)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. outline the role of the anti-infectives on the body.
2. outline the etiology of specific infectious disease.
3. describe the action of therapeutic agents of selected infectious diseases.
4. classify drugs according to their therapeutic action and chemical structure.
5. describe the mechanism of drugs used to treat infectious diseases.
6. outline side effects, adverse effects, and contraindication of selected drugs.
7. recall indication of drugs used to treat infectious diseases.

Content:

Antimicrobials

cell wall synthesis inhibitors

Protein synthesis inhibitors

Bacterial Nucleic acid synthesis inhibitors

Antifungal agents

Antiviral agents

Anti-parasitic chemotherapeutic agents

Cancer Chemotherapeutic agents

METHODS OF DELIVERY:

1. Lectures
2. Discussions
3. Case Study Analysis
4. Presentation
5. Research

6. Project
7. Simulation

METHODS OF ASSESSMENT AND EVALUATION: 100% Continuous Assessment

Common coursework:

Written Assignment	10%
Test 1	15%
Test 2	15 %
Presentation/research	10 %
Final exam	50%

RESOURCE MATERIALS:

Bachenheimer, B.S., (2019). *Manual for Pharmacy Technicians* 5th Ed. American Society of Health System Pharmacists, Inc.

Davis, K., & Guerra, A. (2019). *Mosby's Pharmacy Technician: Principles and Practise* Elsevier.

Stuhan, M.A., (2012). *Understanding Pharmacology for Pharmacy Technicians*.

American Society of Health-System Pharmacists

Website

Ebscohost Databases – <http://www.ebscohost.com>

ProQuest Databases – <http://www.proquest.com>

Springer e-books – <http://www.springer.com>

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:	HEALTHCARE LAW AND ETHICS
COURSE CODE:	PTLE2201
CREDITS:	Three (3)
CONTACT HOURS:	45 (45 hours theory)
PRE-REQUISITE(S):	[Admission into the program]
CO-REQUISITE(S):	None
SEMESTER:	III

COURSE RATIONALE:

The primary goal of this course is help students gain relevant knowledge of a wide range of important and current legal and ethical concepts pertaining to healthcare law and ethics. As a healthcare worker it is important to understand complex healthcare policies and the legal implications no matter your personal beliefs. Therefore, following certain ethical standards and codes of conduct will ensure good patient care that will protect you and those you care for.

COURSE DESCRIPTION:

In this course, students will learn how law affects healthcare practitioners and Pharmacy practice, the basics of the process of litigation and its alternatives, confidentiality of healthcare information, and laws regulating the procurement and dispense of pharmaceuticals. Topics to be discussed will include information collected and maintained by The Standards and Regulation Division of the Ministry of Health (MOH), and The National Essential Medicines list; Vital, Essential, and Necessary (VEN). Case studies are employed to provide students a contextual focus on specific aspects of healthcare law and ethics.

COURSE OUTCOMES:

Upon completion of this course, students should be able to:

1. define ethical aspects and application of laws and regulations pertaining to healthcare including civil and criminal laws and discuss their implication at the pharmaceutical level.

2. analyse the role of the Standards and Regulation Division in pharmaceutical industry of Jamaica.
3. evaluate how the Standards and Regulations Division impact healthcare practices in Jamaica.
4. examine legal issues of patient rights and responsibilities, and corporate responsibilities and liability.
5. explain the ethical issues surrounding pharmaceutical services in the private and public sectors.
6. explore healthcare case studies related to pharmaceutical services with respect to local law and elements of criminal law.
7. analyse legal responsibilities, constraints and potential liabilities relating to procurement and distribution in the pharmaceutical industry.

UNIT I – INTRODUCTION TO HEALTHCARE LAW AND ETHICS (6 hrs)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. distinguish between the terms ethics and law.
2. define civil and criminal laws related to healthcare practice.
3. summarize appropriate ethical behaviour of healthcare professionals.
4. apply information and knowledge of established global laws and regulations that govern healthcare.

Content:

1. Healthcare law and ethics.
 - a. Ethics and law
 - b. Guiding principles and practice of medical ethics
 - c. Ethical duties of healthcare practitioners
 - d. Professional conduct and liability (civil and criminal)
2. Professional offenses and misconduct.

3. Conflicts of Interests.
4. Disciplinary procedures for healthcare workers.

UNIT II – STANDARDS AND REGULATIONS DIVISION OF THE MINISTRY OF HEALTH (6 hrs)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. outline the legislative framework and branch profiles of the Standards and Regulation Division.
2. examine the laws that regulate pharmaceuticals in Jamaica.
3. describe the role of Advisory Panels for the public and private sectors in healthcare.

Content:

1. The Standards and Regulation Division of the Ministry of Health.
2. Elements of the “Pharmacy Act”.
 - a. Pharmacy Council
 - b. Registration of Pharmacists, Pharmaceutical students, Pharmacies and Owners
 - c. Compounding, Dispensing, Storing, and Selling
 - d. Regulations and restrictions
3. “Food and Drugs Act, 1964”.
4. “Precursor Chemicals Act, 2005”.
5. The Advisory Panels
 - a. Medical Review Panel (serious clinical complaints)
 - b. Ethics and Medico-Legal Affairs Panel (research on human subjects).
6. Product registration in Jamaica.
 - a. Product registration
 - b. Import permit processing
 - c. Registration and monitoring of institutions and facilities

UNIT III: PATIENT RIGHTS AND RESPONSIBILITIES

(6 hrs)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. describe the purpose and rationale for a patient's right to healthcare.
2. outline elements of the Patients' Rights & Responsibilities Policies from medical facilities.

Content:

1. Legal and ethical guidelines for of patient information.
2. Communication channels of diagnosis and treatment procedures.
3. Access to health records and explanation of healthcare bills.
4. Pathways for continuity of care:
 - a. Patient referral pathways
 - b. Transfer of patient care pathways

UNIT IV: ETHICAL ISSUES OF PHARMACEUTICAL SERVICES IN THE PUBLIC AND PRIVATE SECTOR

(6 hrs)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. describe ethical challenges of access, availability, and quality of pharmaceuticals in the public and private sectors.
2. review human resource challenges related to supply and demand of pharmaceuticals in the public and private sectors.

Content:

1. Access, availability, and quality of pharmaceuticals in public and private facilities.
2. Current data and trends of human resources within the public and private facilities.

UNIT V: ETHICAL DILEMMA CASE STUDIES

(9 hrs.)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. identify ethical dilemmas faced when dispensing medicines.
2. evaluate how to make a moral and sound decision in relation to dispensing medication.
3. evaluate ethical dilemmas regarding patient consent and/or refusal for treatment.
4. interpret professional decisions based on consequences versus decisions based on duty.
5. gather important information required for reporting mistakes and near misses.
6. participate in continuous quality improvement measures for achieving effective resolution.
7. recognize moral conflicts that healthcare workers face.

Content:

1. Abortion, Sterilization, and Contraception.
2. Genetics, Birth, and the Biological Revolution.
3. Mental Health and Behavior Control.
4. Formularies and Drug Distribution Systems.
5. Experimentation on Human Subjects.
6. Death and Dying.

UNIT VI: PROCUREMENT AND DISTRIBUTION LAWS

(12 hrs)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain the laws that regulate pharmaceuticals and procurement requirements for ordering and dispensing.
2. demonstrate an understanding of pharmaceuticals products that require special handling and/or storage.

3. justify generic drug substitution and the reasons why prescribers ~~to~~ indicate if substitutions are not authorized.
4. summarize the laws and regulations that govern Pharmacy Technicians.
5. complete appropriate processes in the management of pharmaceutical recalls or disposal of expired medicines.
6. describe the process of quality assurance.

Content:

1. Food and Drug Act- 1975 Jamaica
2. Pharmacy Council of Jamaica – licensure and registration
3. The National Health Fund
 - a. The National Health Fund Act
4. Pharmacy Services
 - a. Medical Warehousing
 - b. Procurement
 - c. Warehousing
 - d. Distribution
5. Pharmacy Software
 - a. Pharmacy Partners
 - b. Outpatient/In-patient services
 - c. NHF Quick Prescript

METHODS OF DELIVERY:

1. Lectures (in-person and/or virtual)
2. Discussions
3. Case Studies and Analysis
4. Reading assignments
5. Ethical Dilemma Documentation tools
6. Field Research Project(s)

METHODS OF ASSESSMENT AND EVALUATION:

100% Continuous Assessment

Unit 1 Introduction to Healthcare Law and Ethics	10%
Unit 2 Standards and Regulations Division of the Ministry of Health	10%
Unit 3 Patient Rights and Responsibilities	10%
Unit 4 Ethical Issues of Pharmaceutical Services in the Public and Private Sector	10%
Unit 5 Ethical Dilemma Case Studies	25%
Unit 6 Procurement and Distribution laws	35%

RESOURCE MATERIALS:

Recommended Text

Edge, R.S., and Groves, J.R., (2018). *Ethics of Health Care: A Guide for Clinical Practice* 4th Edition.

Websites

Ebscohost Databases – <http://www.ebscohost.com>

Springer e-books – <http://www.springer.com>

ProQuest Databases – <http://www.proquest.com>

[About Us – Pharmaceutical Society of Jamaica \(psjjamaica.org\)](http://psjjamaica.org)

Other Resources

 Jamaica Food and Drugs Act 1964.pdf	 Revised-MOH-Polic y-and-Procedure-Ma	 Ven-List-2015.pdf	 Precursor Chemical Act.pdf	 sethical_dilemma_do cumentation_tool.d
 nhf_act_merged.pdf				

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:	ADMINISTRATIVE CARE MANAGEMENT
COURSE CODE:	PTCM2201
CREDITS:	3
CONTACT HOURS:	45 hours (Theory)
PRE-REQUISITE(S):	COMM 1101- Communications 1 NAPH 1101- Human Anatomy and Physiology 1
CO-REQUISITE(S):	none
SEMESTER:	IV

COURSE RATIONALE:

This course is designed to develop competencies for best practices in client/patient communication relationship management, data gather, information management, pharmaceutical and non-pharmaceutical stock inventory management. Students will utilize life skills such as planning, critical thinking, management, and organization to evaluate client/patient needs' and to work effectively as a team player.

The course will provide information/strategies to improve practice and assist clients/patients and their support system in a collaborative process to manage their challenges (medical/ social/ mental health conditions) more effectively. The intent is to allow students to achieve knowledge, abilities coordination of care competencies as professionals that will help students to **evaluate, advice** and guide clients/patients and their families through comprehensive list of services and activities.

COURSE DESCRIPTION:

This course will explain the Jamaica Health Care System within the context of what is involved in Administrative Care Management (ACM). ACM is defined as a set of activities designed to assist patients and their support systems in managing general health, unique conditions and related psychosocial problems more effectively, with the aims of improving patients' functional health status.

This is a one (1) semester course that will provide students with the understanding of the functions, principles, and skills in management to successfully administer the total care of clients/patients from birth to end of life. The programme will expose students to the theory applied to their practice while working with patients from within homes, immediate care givers, medical/pharmacological practitioners in home or hospital, prepare simple psycho-social assessments and to be able to

design brief interventions benefitting client's mental stability, as well as, to provide essential knowledge and skills to work in health and related facilities

Emphasis will focus on basic Advocacy skills based on the fact that persons in this field of practice are expected to be advocates for their clients making it necessary for students to be aware to guide clients/patients and their families through term of care services to manage their health.

COURSE OUTCOMES:

Upon successful completion of this course students will be knowledgeable of the overall administration of care to targeted population inclusive of coordinating rehabilitation from hospital appointments, specialist treatment and location transitions ultimately improving the overall quality of care at the required standards.

Upon completion of this course students will:

1. demonstrate knowledge of the functions and principles of management.
2. demonstrate skills in the area of general Administrative Care Management.
3. apply the skills required for Care Management in a variety of healthcare or home-based settings.
4. identify the information needs of organizations.
5. explain relationship between the administrative and other functions of the organization.
6. work collaboratively with members of the healthcare professionals in managing every aspect of patient care.
7. illustrate/apply the management and professional principles in practice as caregivers.
8. outline components of effective communication.
9. interact with patients, families, and members of the healthcare team in a professional manner.
10. utilize the interpersonal skills appropriate for working in patient/client services.
11. utilize professional decision-making/problem-solving skills in a helping relationship.
12. respect diversity and differences in human relations and services.
13. display characteristics of a team player.
14. provide appropriate emotional support to clients/patients.
15. plan personal health services, within the existing culture, technological context, and environment of the time.

16. delivery personal health services, within the existing culture, technological context, and environment of the time.
17. conduct simple/preliminary evaluation of how to assess impact of services offered.
18. comply with (legal and medical) requirements of the profession in the administration of care.
19. evaluate patient progress.
20. enter the workforce qualified in the efficient and effective management of patient care.

UNIT 1 - CONCEPTS MANAGEMENT & ADMINISTRATION 9 hrs

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain the meaning of Management and Administration.
2. outline the relationship between Management and Administration
3. describe the general functions and principles of Management (within an organization).
4. employ/utilize the necessary skills and principles needed for effective management/administration.
5. operationalize the general functions of management (Planning, Organizing, Directing and Controlling).
6. differentiate between care administration and management in any organization.

Content:

1. Definition of the concept of Management.
2. Definition of the concept of management from the Administrative Management Perspective.
3. Functions of Management - Planning, Organizing, Directing (leadership, Communication, Motivation, Delegation) & Controlling (Evaluation, Assessment).
4. General Decision-making process.
5. Management skills.
6. Administrative Principles and Practices.

UNIT 2: COMPREHENSIVE UNDERSTANDING OF CARE

6 hrs

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. determine what is Care Administration/management.
2. identify the achievement of goals that result in achieving optimal level of wellness for clients.
3. identify the skills necessary to improve coordination of care while providing cost effective, non-duplicative services.
4. outline the process of Care Administration and Management.
5. Review different job descriptions or role of the care administrators and care givers.
6. identify different agencies and organization that administer care service.

Content:

1. Key components of a comprehensive care management program.
2. Tools and Strategies in designing programs to effectively meet the needs of clients/patients with complex and special needs.
3. Strategic Management of different populations (elderly, children, those with physical disabilities or those with a mental illness.) with their different needs.
4. Agencies/ Organizations administering the different care services to different populations
5. Pharmacy Technicians do not do home visits.

UNIT 3: CARE MANAGER JOB (DESCRIPTION)

6 hrs

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. describe the functions of Administrative Care Management.

2. identify the services provided by government, non-government, and other agencies the clients/patients might access.
3. differentiate between authority and responsibility in organizations.
4. operationalize care while providing cost effective, non-duplicative services.
5. describe the levels of management/administration in organizations.
6. practice effective decision-making skills.
7. practice time management skills.
8. practice working in teams/being good team player.

Content:

1. Job description of the caregiver.
2. The role of the Administrative Care Manager and other related professions.
3. Delivery of quality Customer/Client (working together with family members and patient/client).
4. Government, non-government service organizations.
5. Decision-making in Management and Administration.
6. Time management skills.
7. Teamwork.

**UNIT 4: INTERVENTION TECHNIQUES WITHIN THE CONTEXT OF CARE
MANAGEMENT 6hrs**

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. explain the intervention theories and techniques relevant to the population/client being served.
2. demonstrate knowledge of the different types of intervention theories and techniques relevant to the population being served.

3. develop an intervention plan (know what is included in the plan).

Content

1. Intervention Theories & Techniques.
2. Intervention Planning.
3. Designing the Intervention Plan.

UNIT 5: KNOWLEDGE OF WELFARE AGENCIES POLICIES

4hrs

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. identify at least six (6) related welfare services provided by both government and non-government organizations in Jamaica.
2. determine welfare services available to different client groups.
3. explain to client/patients how to access services/benefits.
4. relate how services can be on accessed by client.
5. coordinate care of clients/patients while ensuring cost effective, non-duplicative services.
6. outline policies governing welfare services in Jamaica according to the Jamaica Welfare Commission Act.

Content:

1. Welfare Policies and services in place in Jamaica relevant to clients/patients.
2. Accessing benefits Health care/services among others.

UNIT 6: CARE MANAGEMENT & PLANNING TRANSITIONS

5hrs

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. plan transitional care for patients with a variety of health care needs.
2. design paper transactions necessary for each case (design forms where applicable).
3. employ decision-making and time management skills in activities.

4. differentiate between the roles of care administrators and management.
5. process clients/patients for transitioning in and out of care facilities.
6. record patient data related to timing for medications administration and reporting abnormal behaviours/activities.

Content:

1. Transition Procedures in care.
2. Decision-making factors for transition to and from care.
3. Conducting Simple psycho-social evaluation.
4. Basic Records Management (noting of timing for medications, treatment and reporting abnormal behaviours/activities).

UNIT 7: INTER- PROFESSIONAL COMMUNICATION WORKING WITH CLIENTS/PATIENTS AND CARE TEAMS

6hrs

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. identify the elements/factors that contribute to effective communication.
2. explain the importance of good/effective communication.
3. demonstrate knowledgeable of the guidelines for effective communication.
4. describe 'effective' communication in organizations/workforce.
5. describe principles of best practice for inter-professional teamwork.
6. identify barriers to effective communication among team members.
7. explain factors that make team perform successfully.
8. observe best practices in inter-professional communication.
9. communicate with teams and families in the care of patients.
10. devise strategies for effective communication among team and with patients.

Content:

1. Communication process.

2. Effective Communication skills.
3. Team building/working skills.
4. Effective Team building skills.

METHODS OF ASSESSMENT AND EVALUATION: Continuous in-course assessment

1. *Unit Assessment - Short answer questions/responses at the end of 4 of the Units = 10%
(2 ½ marks for each Slip/response)
2. Individual assignments/Essay 10%
3. Group projects & Formal presentations 20%
4. Final assessment 60%

***Unit Assessment/responses will come from Units 1, 2 6 & 8**

RESOURCE MATERIALS:

Barrett, I. (2000). *Administrative Principles and Practices*. University of the West Indies, Jamaica.

Ferreira, E. J., Erasmus, A. W., & Groenewald, D. (2010). *Administrative Management* 2nd ed.

Groenewald Juta and Company Ltd.

Jamaica Social and Welfare Commission (1965). [Online] Available from:
<https://moj.gov.jm/sites/default/files/laws/JAMAICA%20SOCIAL%20WELFARE%20COMMISSION%20ACT.pdf>

Journals: British Journal on Management

<https://ihmf.teachable.com/p/healthcare-management-e-books>

Pandit, S. B., & Pandit, R.B. (2021.) *Nursing Administration and Management A Practical Approach* Paperback Paras Medical Publisher.

Robbins, S.P., & DeCenzo, D. A. (2008). *Fundamental of Management* (6th Ed) NJ: Prentice Hall.

Sample: Job Description of Administrative Care Manager

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:	FIELD PRACTICUM
COURSE CODE:	PTFP2301
CREDITS:	6
CONTACT HOURS:	270
PRE-REQUISITE(S):	All modules in Semesters 1 to IV
CO-REQUISITE(S):	none
SEMESTER:	Summer 1

COURSE RATIONALE:

On site experience is essential to the total development of a Pharmacy Technician. The skills-based nature of the program enables measurable competency tasks to be observed and documented to develop the professional portfolio of the student. Networking and personal development assets are honed in this course.

COURSE DESCRIPTION:

The Field Practicum is designed to explore the tangible and soft professional competencies that students must be able to demonstrate in order to be considered competent. This practical experience will be carried out in a pharmacy. It presents an opportunity to demonstrate skills taught in the program of study.

COURSE OUTCOMES:

Upon successful completion of this course, the learner will be able to:

1. demonstrate competence in daily operations in managing drug orders and inventory profile.
2. demonstrate customer service skills.
3. assess the principles of pharmacy management.
4. evaluate pharmacy operations.
5. differentiate between the various types of pharmacy and pharmacy practice.

6. resolve issues related to returned and undesired pharmaceutical and non-pharmaceutical items.
7. value insurance and the procedures involved for the beneficiary.

UNIT 1- PHARMACY OPERATIONS

(54 hrs)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. outline the types and practice of pharmacy.
2. identify the types of certifications in pharmacy.
3. document drug orders as per pharmacy preference.
4. file drug orders as per pharmacy preference.
5. operate Computer Software Applications.
6. articulate the basic use of drugs to assist clients/patients.
7. select pharmaceutical items based on clients/patient's demand.

Content:

1. Types of Pharmacy
 - a. Hospital
 - b. Community
 - c. Institutional-Distribution and Regulatory
2. Certification
 - a. National
 - b. Regional
 - c. International
3. Pharmacy Billing
4. Pharmacy Management Software
5. Standard Registers
 - a. P.O.S Systems
 - b. Tap and Chip
6. Manual Filing Technology

UNIT II: MANAGEMENT OF SYSTEMS AND SERVICES

(54 hrs)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. describe the procedures involved from request to delivery.
2. process clients/patients requests manually and electronically.
3. differentiate between clients/patient's subsidy programs and eligibility.
4. monitor medication requests.
5. maintain up to date records of inventory.
6. compile data based on product research.

Content:

1. Process drug request
2. Inventory Management
3. Drug subsidy
4. Documentation-inventory
5. Research
 - a. Internet
 - b. Journal
 - c. Magazine

UNIT III: CUSTOMER SERVICE

(54 hrs)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. define the term Customer Service.
2. outline the principles of good customer service.
3. describe customer service requirements and skills for best customer outcome.
4. role-play effective customer service.
5. demonstrate proper email etiquette for customer service.
6. reflect on customer service delivered.

7. demonstrate problem-solving skills.
8. summarize techniques and strategies for handling difficult customers.
9. recommend practices/strategies to improve customer satisfaction.
10. observe ethical and legal guidelines for protecting the confidentiality of patient information.

Content:

1. Positive and negative feedback in communication.
2. Body language.
3. Netiquette-email.
4. Proper phone and in-person greeting.
5. Angry customers.
6. ethical and legal guidelines for protecting the confidentiality.

UNIT IV: RESOLUTION OF UNACHIEVED PRODUCTS AND SERVICES (54 hrs)

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. identify unmet product of service.
2. identify gaps in processing orders for returned items.
3. provide support to patients who return items.

Content:

1. Age related errors
2. Conflict Resolution
3. Quality Assurance
4. Patient dose specific errors
5. Reconciliation of medical errors

Learner Outcomes:

Upon successful completion of the unit, the learner will be able to:

1. outline the history of insurance policies locally and internationally.
2. apply charges based on health package.
3. examine changes in policy due to stakeholder's adjustments such as government policies.
4. explain the verification process of insurance benefits.

Content:

1. Premium
2. Deductive
3. Beneficiary
4. Effective date
5. Exclusive
6. Limitation
7. Drug formulary
8. Third Party Billing
9. Private and group Medical Insurance

METHODS OF DELIVERY:

1. Demonstration
2. Observation
3. Journal
4. Written Report

METHODS OF ASSESSMENT AND EVALUATION:

- | | |
|---|-----|
| 1. Completion of 270 log signed by Supervisor | 60% |
| 2. Reflective Journal | 20% |
| 3. Written Report | 20% |

RESOURCE MATERIALS:

Bachenheimer, B.S., (2019). *Manual for Pharmacy Technicians* 5th Ed. American Society of Health System Pharmacists, Inc.

Davis, K., & Guerra, A. (2019). *Mosby's Pharmacy Technician: Principles and Practise* Elsevier.

Website

Ebscohost Databases - <http://www.ebscohost.com>

Springer e-books - <http://www.springer.com>

ProQuest Databases – <http://www.proquest.com>

Evaluation form

1.Outstanding 2. Above Average 3. Satisfactory 4. Needs improvement 5. Below average

Competencies	1	2	3	4	5
Customer service - recognize customers' needs - empathize with customers - assist customer solve problems - display proper telephone etiquette					
Pharmacy operations - demonstrate knowledge of pharmacy policies - create patient profiles - accurately process prescriptions - identify and classify drugs as per classification of List 1, 2 and 4					
Health insurance - demonstrate knowledge of health insurance policies - process insurances - articulate policies of insurance companies - explain the concept of co-payment and maximum over benefit					
Management systems and services - Demonstrate knowledge of tracking system for monitoring patient drug history - Manage inventory- value First-In -First-Out notion - demonstrate knowledge of the ordering processes from pharmaceutical companies - demonstrate proficiency in pharmaceutical compounding and reconstitution of products					

Rubric Reflective Journal

1	2	3	4	5
Demonstrate thorough understanding of assignment Using specific examples with an excellent command of the English language. Apply pharmaceutical knowledge and the reflection is insightful. Concurrent use of terminologies	Demonstrate a thoughtful assignment. Limited examples used. Average command of the English Language. Application of Pharmaceutical knowledge needs improvement.	Demonstrate a basic understanding of the assignment. Examples are not concise and relevant to the subject matter. Use basic but appropriate language Limited application of knowledge use of terminologies not concurrent.	Demonstrate a limited understanding the assignment This reflection needs revision. Use of terminologies inappropriate. Vague application of pharmaceutical knowledge	Demonstrate little or no understanding the assignment. This reflection requires much revision. Poor command of the English Language. No use of terminologies Unsatisfactory Redo Reflection

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:	Human Anatomy and Physiology I
COURSE CODE:	NAPH1101
CREDITS:	3
CONTACT HOURS:	75 (30 theory, 45 hours practical)
PRE-REQUISITE(S):	Matriculation Requirements
CO-REQUISITE(S):	None
SEMESTER:	1

COURSE DESCRIPTION:

This course introduces learners to normal anatomy and physiology of the human body. An organ systems approach to learning the human body will be taken and learners will examine the relationship of structure and function, the interrelationship of different organ systems and how body physiology works to maintain homeostasis. The course is divided into two parts. **Part 1** introduces anatomy and physiology and focuses on the integumentary, musculoskeletal, nervous, endocrine, and respiratory systems. **Part II** covers the lymphatic, gastro-intestinal, reproductive, and urinary. Laboratory exercises are included in both courses. An understanding of the correlation between anatomical structure and physiological functions of the human body will provide a framework for sound clinical judgement in nursing practice.

COURSE OUTCOMES:

Upon successful completion of this course, learners will be able to:

1. demonstrate the correct usage of basic anatomical terminology.
2. describe the structure and characteristics of living matter.
3. explain the primary and secondary chemical elements and their abbreviations found in the body.
4. describe the organization and structural units of the body.
5. compare the major tissues found in the human body and relate their structure and location to specific functions.
6. describe the structure and function of the integumentary, cardiovascular, nervous, endocrine, and respiratory systems.
7. differentiate between the discrete and integrated structures and functions of each system within the human body.

8. integrate anatomic and physiological concepts into science-laboratory-based exercises.
9. recognize the importance of the knowledge of human anatomy and physiology as a pre-requisite for nursing care of patients

UNIT I – Introduction to Anatomy and Physiology

(3 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. define terms used in this unit according to reputable sources.
2. identify the types of living matter, their structure and characteristics using key terms.
3. differentiate between the primary and secondary chemical elements found in the body.
4. apply knowledge of the anatomic directions, planes, positions, and cavities of the body to nursing care.
5. identify the structural units of the body.
6. differentiate between the location, structure, and function of the main tissue types.
7. describe the types, location, and function of the membranes of the human body.
8. distinguish between the systems of the human body.
9. identify diagnostic clinical technology instruments used in diagnosing select body parts.

Content:

1. Definition
 - a. Anatomy
 - b. Physiology
 - c. Biology
 - d. Gross anatomy
 - e. Microscopic anatomy
 - f. Cytology
 - g. Histology
2. Living matter
 - a. Definition
 - b. Types
 - i. Solids
 - ii. Liquids
 - iii. Gases
3. Structure of matter
 - a. Molecules
 - i. Atoms
 - b. Ions
 - i. Definition
 - c. Electrolytes
 - i. Types
 - ii. Functions

- d. PH
- 4. Characteristics of living matter
 - a. Metabolism
 - b. Growth
 - c. Reproduction
 - d. Adaptation
 - e. Organization
- 5. Elements
 - a. Compounds
 - b. Mixture
- 6. Chemical elements
 - a. Primary bio-elements
 - b. Other chemical elements
- 7. Anatomic directions
- 8. Anatomical body planes
- 9. Body positions
- 10. Main body cavities & functions
 - a. Cranial
 - b. Vertebral
 - c. Thoracic
 - d. Abdominal
 - e. Pelvic
- 11. Structural units of the body
 - a. Chemical
 - b. Cells
 - c. Tissues
 - d. Organs
 - e. Systems
- 12. Tissues & membranes
 - A. Tissues
 - a. Definition
 - b. Basic types: location, functions
 - i. Epithelium
 - ii. Connective
 - iii. Muscle
 - iv. Nervous
- 13. Membranes
 - b. Definition
 - c. Types, location, functions
 - i. Mucous
 - ii. Serous
 - iii. Cutaneous
 - iv. Synovial

14. Types of clinical technology diagnostic instruments:

- a. X-rays
- b. Computerized tomography (CT) scans
- c. Magnetic resonance imaging (MRI)
- d. Spiral CT scans
- e. Ultrasound images
- f. Digital subtraction angiography images (DSA)
- g. Position emission tomography (PET) scans
- h. Other.

UNIT II – Integumentary System: Skin, Nail and Hair

(3 theory hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. describe the structure and functions of the various layers of the skin.
2. discuss the location, structure, and functions of the accessory structures of the skin.
3. compare the two types of glands in the skin based on structure and secretion.
4. describe the functions of the skin.
5. explain the term pigment and its role in skin colour differences among people.
6. apply knowledge of the growth and repair process of the skin and accessory structures to nursing care.

Content:

1. Skin structure & functions.
 - a. Epidermis & cells
 - b. Dermis & cells
 - c. Hypodermis: blood vessels & nerve cells
2. Accessory structures: structure & functions.
 - b. Sweat gland
 - c. Sebaceous gland
 - d. Hair
 - e. Nail
3. Functions of the skin.
 - a. Protection
 - b. Regulation of body temperature
 - c. Sensation
 - d. Absorption
 - e. Excretion
4. Pigment & functions.
5. Growth & repair of skin & accessory structures.

UNIT III –Support and Movement Systems of the Body: Musculoskeletal System (6 theory/15 practical hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. describe the organization of the skeletal system.
2. distinguish between the classification, types, location, structure and function of bones, joints, cartilages and muscles.
3. describe the blood and nerve supply of bones, joints, cartilages, and muscles.
4. explain the formation, growth and repair processes of bones, joints, cartilages, and muscles.
5. discuss the chemical composition of bones.
6. apply knowledge of the effects of diet on bone development in children and bone maintenance in older adults.
7. compare and contrast the structure of the four (4) bone classes, providing examples for each class.
8. identify bone markings of various types of bones using the bone classification system.
9. discuss the functional properties of the three (3) types of cartilages in maintaining joint function.
10. identify the location, structure, and function of skeletal, smooth and cardiac muscles.
11. describe the current concept of muscle contraction based on three (3) factors – neuro-electrical, chemical and energy sources.
12. compare isotonic and isometric contraction of skeletal muscles.
13. discuss the importance of good posture in relation to muscle function.

Content:

1. Skeletal system
2. Skeletal organization
 - a. Appendicular skeleton
 - i. Upper & lower limbs
 - b. Axial skeleton
 - i. Skull: cranial & facial bones
 - ii. Vertebrae
 - iii. Ribs & sternum
3. Skeletal system/Bones
 - a. Classification & structure of bone
 - b. Bone markings
 - c. Parts of a long bone
 - d. Flat bone
 - e. Chemical composition of bone
 - f. Bone formation, growth & repair

- g. Factors influencing bone formation
- h. Growth of bones
- i. Ossification
- j. Bone function
- 4. Articular system/Joints: classifications, structure & function of each
 - a. Functional classifications
 - i. Synarthrodial: immovable
 - ii. Amphiarthrodial: slightly
 - iii. Diarthrodial: freely movable
 - b. Anatomical classifications
 - i. Fibrous
 - ii. Cartilaginous
 - iii. Synovial
- 5. Types of joint movements
 - a. Gliding
 - b. Angular
 - c. Special
- 6. Lifespan structural & functional changes
 - a. Fontanelles
 - b. Epiphyseal plates
 - c. Fibrocartilage losses: water, flexibility
 - d. Collagen
 - e. Movement
- 7. Types and functions of cartilages
 - a. Hyaline
 - b. Elastic
 - c. Fibrocartilage
- 8. Muscular system
- 9. Types, origin, insertion, structure, functions of muscles
 - a. Skeletal
 - b. Cardiac
 - c. Smooth
 - d. Sliding filament theory
- 10. Physiology of muscle contraction
 - a. Tonus
 - b. Stimulation
 - c. Contraction
 - d. Response to stimuli
- 11. Muscle-bone interactions
 - a. Lever system
 - b. Flexors
 - c. Extensors

- d. Abductors
- e. Adductors
- 12. Tendons & ligaments
- 13. Mechanics of movement by leverage
 - a. Law of Motion (source: <http://www2.hesston.edu/Physics/BodyMech-LB/lbresearch.htm>)
 - b. Torque
 - c. Joints and levers
- 14. Posture
 - a. Definition
 - b. Maintenance
 - c. Importance to body as a whole.

UNIT IV – Integration and Coordination Systems: Nervous System (9 theory/7 practical hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. discuss the structural and functional divisions of the nervous system.
2. list the basic functions of the nervous system.
3. identify the structural and functional classification of neurons.
4. describe resting membrane potential including its resting membrane electrochemical basis.
5. discuss the nerve impulse transmission mechanism.
6. explain the mechanism of the reflex arc.
7. describe the process of brain development.
8. name the four (4) major regions of the adult brain.
9. describe the three (3) major regions of the brain stem, and the general function of each.
10. differentiate between the major spinal cord tracts, including their origin, termination, and function.
11. discuss the formation, characteristics, and functions of the cerebro-spinal fluid.
12. describe the sympathetic and parasympathetic nervous system.
13. describe the twelve (12) pairs of cranial nerves including their effect on body functions
14. distinguish between autonomic and somatic reflexes.
15. outline the structure, functions, and related physiology of the sense organs.

Content:

1. Organization of the nervous system.
2. Neurophysiology:
 - a. Basic principles of electricity
 - b. The resting membrane potential: the polarized state
 - c. Membrane potentials as signals

- d. The synapse
- e. Postsynaptic potentials & synaptic integration
- f. Neurotransmitters & their receptors
- 3. Basic concepts of neural integration.
 - a. Organization of neurons: neuronal pools
 - b. Types of circuits
 - c. Patterns of neural processing
- 4. Developmental aspects of neurons
- 5. The brain
 - a. Regions & organization of the brain
 - b. Ventricles of the brain and cerebrospinal fluid
 - c. The cerebral hemispheres
 - d. The diencephalons
 - e. The brain stem
 - f. The cerebellum
 - g. Functional brain systems
 - h. Protection of the brain
 - i. Homeostatic imbalances of the brain
- 6. The spinal cord
 - a. Gross anatomy & protection of the spinal cord
 - b. Cross sectional anatomy of the spinal cord
 - c. Embryonic development of the brain & spinal cord
 - d. Developmental aspects of the CNS
 - e. Diagnostic procedures for assessing central nervous system (CNS) dysfunction
- 7. The peripheral nervous system (PNS)
 - a. Sensory receptors
 - b. Nerves and associated ganglia
 - c. Motor endings
- 8. Cranial nerves
- 9. Spinal nerves
 - a. General features of spinal nerves
 - b. Innervation of specific body regions
- 10. Reflex activity
 - a. Components of a reflex arc
 - b. Spinal reflexes
- 11. Developmental aspects of the PNS
- 12. The Autonomic Nervous System (ANS)
 - a. Comparison of the somatic & autonomic nervous system
 - b. Divisions of the ANS
- 13. Anatomy of the ANS
 - a. Parasympathetic (cranio-sacral) division
 - b. Sympathetic (Thoraco-lumbar) division
 - c. Visceral reflexes
- 14. Physiology of the ANS
 - a. Neurotransmitters and receptors

- b. The effects of drugs
- c. Interactions of the autonomic divisions
- d. Control of autonomic functioning
- 15. Homeostatic imbalances of the ANS
- 16. Developmental aspects of the ANS
- 17. Sensory integration – reception to perception
 - a. General organization of the somato-sensory system
- 18. Motor integration – intension to effect
 - a. Levels of motor control
 - b. Homeostatic imbalances of motor integration
- 19. Higher mental functions
 - a. Brain wave patterns and the electro encephalogram (EEG)
 - b. Consciousness
 - c. Sleep and sleep-wake cycles
 - d. Memory
- 20. Developmental aspects of the special senses
- 21. The chemical senses -- tongue & nose: taste & smell
 - a. Structure of the tongue & nose
 - b. Taste buds & the sense of taste
 - c. The olfactory epithelium & the sense of smell
 - d. Homeostatic imbalances of the chemical senses
 - e. Diagnostic instruments of the nose
- 22. The eye & vision
 - a. Accessory structures of the eye
 - b. Structure of the eyeball
 - c. Physiology of vision
 - d. Diagnostic instruments of the eye
- 23. The ear: hearing & balance
 - a. Structure of the ear
 - b. Sound & the mechanisms of hearing
 - c. Homeostatic imbalances of hearing
 - d. Mechanisms of equilibrium & orientation
 - e. Diagnostic instruments of the ear.

UNIT V – Integration and Coordination Systems: Endocrine System **(6 theory/5 practical hours)**

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. identify the endocrine organs/glands and their location.
2. explore the characteristics of the major endocrine glands.
3. distinguish between the types and functions of endocrine and exocrine glands.
4. differentiate between the functions of hormones secreted by endocrine glands.

5. discuss the effects of the major hormones on the body.
6. explain the regulatory effect of the hypothalamus and prostaglandin on the functions of the endocrine system.
7. describe the relationship of the nervous and endocrine systems in the control and integration of body function.
8. apply knowledge of the body's response to stress.
9. explain the significance of homeostasis in maintaining bodily functions.
10. describe the feedback mechanism and its involvement in maintaining body homeostasis.
11. describe the effects of aging on the function of the endocrine system.

Content:

1. Endocrine system
 - a. Developmental aspects
2. Glands: types & functions of each
 - a. Endocrine
 - b. Exocrine
3. Major endocrine organs: location, structure, function, hormones
 - a. Pituitary
 - b. Thyroid
 - c. Parathyroid
 - d. Adrenal
 - e. Ovaries
 - f. Testes
 - g. Pineal
 - h. Thymus
 - i. Pancreas (islets of Langerhans)
4. Exocrine glands: location, structure, function, hormones
 - a. Salivary
 - b. Bile-producing glands of the liver
 - c. Pancreas (pancreatic fluid)
 - d. Gastric
5. Hormones (Review)
 - a. Types
 - b. Mechanisms of hormone action
 - c. Hormone target cell specificity
 - d. Half-life, onset & duration of hormone activity
 - e. Control of hormone release
6. Regulatory mechanisms
 - a. Hypothalamus
 - b. Prostaglandin
7. Stress syndrome
 - a. Definition
 - b. Concepts
 - c. Stressors

- d. Mechanism of stress
- 8. Homeostasis
 - a. Definition
 - b. Purpose
 - c. Significance
 - d. Mechanism
 - e. Factors affecting homeostasis.
 - f. Feedback mechanism & maintenance of homeostasis
- 9. Effects of the aging process on the endocrine system.

UNIT VI – Processing and Transporting Function: Respiratory System (6 theory/15 practical hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. define terms used in the respiratory system using key terms.
2. outline the embryonic developmental aspects of the respiratory system.
3. identify the structures of the respiratory system.
4. distinguish between the structures of the upper and lower respiratory tract.
5. describe the structure and functions of upper and lower respiratory structures.
6. describe the macroscopic and microscopic anatomy of the lung.
7. describe the general functions of the respiratory system.
8. explain the physiology of ventilation, arterialisation, alveolar exchange, and gas transport.
9. identify the instruments used to measure lung volumes.
10. relate one law concerning gas to the internal respiratory process.
11. outline the role of the respiratory system in the maintenance of acid-base balance.
12. describe the physiological factors which regulate respiration.
13. discuss the physiology of speech.

Content:

1. Definition of respiratory system terminologies including:
 - a. Respiration:
 - i. Internal respiration
 - ii. External respiration
 - iii. Cellular respiration
 - b. Ventilation
 - c. Inhalation
 - d. Exhalation
2. Developmental aspects of the respiratory system.
3. Structures of the respiratory system.
4. Upper respiratory tract structures.

- a. Mucous membranes
 - b. Nose
 - c. Nasal cavity
 - d. Para-nasal sinuses
 - e. Pharynx
 - f. Larynx
5. Lower respiratory tract structures.
 - a. Trachea
 - b. Bronchial tree
 - c. Lungs
 - d. Divisions
6. Functions of the respiratory system.
 - a. Ventilation of the lungs
 - b. Extraction of oxygen from the air & transfer to bloodstream
 - c. Excretion of carbon dioxide and water vapour
 - d. Maintenance of acid base balance in the blood
7. Physiology of respiration.
 - a. Pulmonary ventilation
 - b. External respiration
 - c. Transport of respiratory gases
 - d. Internal respiration
 - e. Types of breathing
 - f. Cellular respiration
8. Selected principles of gases.
 - a. Dalton's law
 - b. Boyle's law
 - c. Gaseous exchange in lungs
9. Diagnostic instrument (s) used in measuring lung volume.
10. Regulation of respiration.
11. Role of respiratory system in maintaining acid-base balance.
 - a. PH of blood
 - b. Oxygen
 - c. Carbon dioxide
 - d. Haemoglobin
12. Physiology of speech.

METHODS OF DELIVERY:

1. Lecture/Discussion
2. Demonstration
3. Visual learning strategies e.g. charts, models, PowerPoint presentation, drawings
4. Gaming strategies
5. Debate
6. Self- directed learning strategies

7. Laboratory sessions
8. Individual/group project

Area Used for Learning

1. Classroom
2. Library
3. Clinical Skills Laboratory
4. Anatomy Laboratory

Learning Experiences

1. Laboratory exercises
2. Observation of post-mortem
3. Use of diagnostic instruments

Required Skills

1. Identification of gross & microscopic anatomical parts
2. Assessment of body symmetry

Student Assessment

- | | |
|---|-------------|
| 1. Mid-semester: | 20% |
| 2. Individual or group presentation/ written objective type and essay exam/ project | 20% |
| 3. End of Semester: Written objective-type and essay examination | 60% |
| Total | 100% |

RESOURCE MATERIAL:

1. Allen, C., & Harper, V. (2014). *Laboratory manual for anatomy & physiology* (5th ed.).

Somerset, New York: John Wiley & Sons.

2. Tortora, G. J., & Derrickson, B. H. (2013/2014). *Introduction to the human body: The essentials of anatomy and physiology* (10th ed.). New York: John Wiley & Sons, Inc.

Online resources:

<https://www.ebscohost.com>

www.springerlink.com/books

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:	Human Anatomy and Physiology II
COURSE CODE:	NAPH1201
CREDITS:	3
CONTACT HOURS:	75 (30 theory, 45 hours practical)
PRE-REQUISITE(S):	Human Anatomy and Physiology I
CO-REQUISITE(S):	None
SEMESTER:	2

COURSE DESCRIPTION:

Human Anatomy and Physiology II is a continuation of **Human Anatomy and Physiology 1**. The course examines the structure and function of the cardiovascular, lymphatic, digestive (gastrointestinal), urinary, and reproductive systems. Laboratory exercises will allow the students to focus on the examination of selected parts of these systems through histological and skeletal preparations.

COURSE OUTCOMES:

Upon successful completion of this course, learners will be able to:

1. describe the structures and functions of the cardiovascular, lymphatic, digestive, urinary and reproductive systems.
2. explain the principles underlying the functions of the cardiovascular, lymphatic, digestive, urinary and reproductive systems.
3. distinguish between pulmonary, coronary, and systemic circulation.
4. explain the role of the digestive system in the body's metabolism of nutrients.
5. describe the role of the urinary system in maintaining water and electrolyte balance.
6. describe the process of the reproductive cycle in the female reproductive system.
7. explain the process of embryology.
8. explain the process of foetal development.
9. apply the biochemical processes to the study of this course.

UNIT I – Processing and Transporting Function: Cardio-Vascular System **(6 theory/9 practical hours)**

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. identify the divisions of the cardio-vascular system.
2. describe the structure and functions of the types of blood vessels.
3. describe the functions of blood.
4. describe the composition, sites of production and functions of cellular parts of blood and plasma.
5. describe the formation of haemoglobin.
6. explain the different types of blood cells, process of formation and destruction.
7. discuss the characteristics of the blood cells relative to their function.
8. identify the constituents of blood plasma and their functions.
9. explain the characteristics of the ABO blood groups and Rh factors.
10. outline the purpose and mechanism of blood coagulation.
11. describe the location, structure and functions of the heart and its great vessels.
12. describe the structure and functional features of the conducting system of the heart and the control of blood flow.
13. describe the circulatory systems.
14. describe the stages of a cardiac cycle.
15. differentiate between systolic and diastolic blood pressure.
16. discuss cardiac output.

Content:

1. Divisions of the Circulatory System & Functions:
 - a. Blood
 - b. Blood vessels
 - c. Heart
 - b. Circulatory system
2. Functions of blood:
 - a. Transportation
 - b. Maintenance of body temperature
 - c. Control of pH
 - d. Removal of toxins from the body
 - e. Regulation of body fluid electrolytes
 - f. Immunity & defence
3. Constituents of blood:
 - a. Plasma
 - b. Red blood cells (erythrocytes)

- c. White blood cells (leucocytes)
 - d. Platelets (thrombocytes)
- 4. Blood cells formation & destruction.
 - a. Haemoglobin formation
- 5. Characteristics & functions of blood cells.
- 6. Blood plasma.
 - a. Definition
 - b. Composition
 - c. Functions
- 7. Blood groups.
 - a. ABO system
 - b. Rhesus factor
- 8. Blood coagulation.
 - a. Purpose
 - b. Mechanism
 - c. Factors affecting clotting mechanism
- 9. Blood vessels.
 - a. Types
 - b. Structure
 - c. Functions
- 10. Heart
 - a. Location
 - b. Structure
 - c. Functions
- 11. Circulatory system
 - a. Types, functions, regulation of circulation
 - b. Pulmonary (lungs)
 - c. Coronary (heart)
 - d. Systemic (rest of the system)
 - e. Foetal
- 12. Conduction system of the heart/cardiac cycle.
 - a. Nodes
 - b. Conduction fibres
 - c. Phases
- 13. Blood pressure
 - a. Definition
 - b. Types: systolic, diastolic
 - c. Factors influencing blood pressure
 - d. Measurement of blood pressure
- 14. Pulse
 - a. Definition
 - b. Characteristics
 - i. Rate
 - ii. Rhythm
 - iii. Volume

- c. Sites
- 15. Cardiac output
 - a. Definition
 - b. Factors influencing output
- 16. Electro-cardiogram
 - a. Definition
 - b. Use.

UNIT II – Processing and Transporting Functions: Lymphatic System (6 theory/9 practical hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. describe lymph, lymph formation, circulation, and the lymphatic system.
2. discuss the structure and function of the lymphatic system.
3. discuss the location, structure and functions of the lymphatic glands.
4. describe the structure and functions of the thymus.
5. describe the structure and functions of the spleen.
6. describe the organization and function of the immune system.
7. discuss the concept of immunity.
8. discuss natural immune and acquired immune.
9. discuss the immune response.
10. describe the cells of the immune system, location, functions, life cycle.
11. identify the inter-relationship of the lymphatic and circulatory systems.

Content:

1. Lymph
 - a. Definition
 - b. Formation
 - c. Circulation
2. Lymphatic system organization: organs, location, structure
 - a. Bone marrow
 - b. Spleen
 - c. Thymus gland
 - d. Lymphoid tissue
 - e. Lymph nodes
 - f. Tonsils
3. Functions
 - a. Maintenance of fluid balance

- b. Transportation of dietary lipids
 - c. Immunity
- 4. Organization & functions of the immune system
 - a. Definition of immunity
 - b. Purpose
 - c. Divisions: definition, function
 - i. Natural immune system
 - ii. Acquired immune system
 - d. Immune response
- 5. Cells of the immune system: location, formation, function, life cycle
 - a. T-cells
 - b. B-cells
 - c. NK cells
 - d. Leucocytes
 - e. Macrophages
- 6. Circulatory system & lymphatic system inter-relatedness.

UNIT III – Processing and Transporting Functions: Digestive System (6 theory/9 practical hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. discuss the processes food undergo in the digestive system.
2. discuss the structure and functions of the digestive system.
3. distinguish between mechanical digestion and chemical digestion.
4. describe the organs of the digestive system, their structure and function.
5. discuss the role of the mouth, teeth, salivary glands, stomach, small and large intestines in the digestive process.
6. describe the process of swallowing.
7. discuss the absorption of nutrients in the digestive system.
8. discuss the process of defecation.
9. describe the functions of the liver.
10. differentiate between the exocrine and endocrine functions of the pancreas.
11. discuss the functions and control of the major digestive enzymes.
12. define metabolism.
13. discuss the metabolic process of carbohydrates, fats, and proteins.
14. define basic metabolic rate.
15. discuss the factors which influence the metabolic rate.

Content:

1. Food processes.
 - a. Digestion
 - b. Absorption
 - c. Elimination
2. Functions of the digestive system.
 - a. Ingestion
 - i. Mechanical digestion
 - ii. Chemical digestion
 - b. Movements
 - c. Absorption
 - d. Elimination
3. General structure of the digestive system/wall of the digestive system.
 - a. Mucosa
 - b. Sub-mucosa
 - c. Muscular layer
 - d. Serous layer
4. Regions of the digestive system: location, structure, function of organs.
 - a. Alimentary tract
 - i. Mouth
 - ii. Pharynx
 - iii. Oesophagus
 - iv. Stomach
 - v. Large & small intestines
 - b. Accessory organs
 - i. Salivary glands
 - ii. Liver
 - iii. Gall bladder
 - iv. Pancreas
5. Digestive glands: location & function.
 - a. Saliva glands
 - b. Glands in the stomach
 - c. Glands in the duodenum or small intestine
6. Control of digestive gland secretions.
 - a. Saliva
 - b. Gastric secretion
 - c. Pancreatic secretion
 - d. Bile
 - e. Intestinal secretion

7. Process of digestion of food in:
 - a. Mouth
 - b. Oesophagus
 - c. Stomach
 - d. Small intestine
 - e. Large intestine
8. Process of peristalsis, absorption & uptake of nutrients.
9. Rectum & anus.
 - a. Process of defecation
10. Metabolism.
 - a. Definition
 - b. Metabolic processes
 - i. Enzymes
 - ii. Catabolism
 - iii. Anabolism
11. Carbohydrate metabolism.
 - a. Principles of carbohydrate metabolism
 - b. Glucose transport
 - c. Glucose catabolism
 - d. Glucose anabolism
 - e. Control of glucose metabolism
 - i. Pancreatic control
 - ii. Pituitary adrenal
 - iii. Adrenal medulla hormones
12. Protein & fat metabolism.
 - a. Catabolism
 - b. Anabolism
 - c. Control
13. Metabolic rate.
 - a. Definition
 - b. Basal metabolic rate (BMR)
 - i. Influencing factors
 - ii. Methods of measurement
 - c. Energy balance & body weight
 - d. Food intake regulating mechanism
 - e. Homeostasis of body temperature.

UNIT IV – Processing and Transporting Functions: Urinary System (6 theory/9 practical hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. identify the functions of the urinary system.

2. name the components of the urinary system, their location, structure, and functions.
3. differentiate between the structure and function of the male and female urethra.
4. describe the process of urine formation.
5. describe the physical and chemical characteristic of urine.
6. explain the flow of urine through the ureters.
7. explain the physiology of micturition.
8. identify principles underlying fluid and electrolyte balance.
9. explain the mechanisms by which the body obtains, distributes, and excretes fluid to maintain homeostasis.
10. compare the composition and volume of body fluid in the intra-cellular and extra-cellular compartments.
11. explain the role of buffers in the maintenance of acid base balance.
12. differentiate metabolic acidosis from respiratory acidosis and metabolic alkalosis from respiratory alkalosis.
13. distinguish between respiratory and urinary mechanism in maintaining acid-base balance.

Content:

1. Functions of urinary system:
 - a. Maintenance of fluid & electrolytes
 - b. Control of pH
 - c. Control of red blood cell production
 - d. Maintenance of blood pressure
2. Components of the urinary system: location, structure, function.
 - a. Kidneys
 - b. Ureters
 - c. Urinary bladder
 - d. Urethra: male, female
3. Urine.
 - a. Formation
 - b. Constituents
 - c. Characteristics
4. Micturition.
 - a. Physiology
 - b. Characteristics of urine: physical, chemical
 - c. Factors influencing micturition
5. Fluid & electrolyte balance.
 - a. Definition
 - b. Principles
 - c. Movements of fluid in & out of the body
 - d. Maintenance of homeostasis of total fluid volume
 - i. Regulation of urine volume
 - ii. Regulation of fluid balance

6. Maintenance of homeostasis of fluid & electrolytes.
 - a. Plasma
 - b. Extra cellular fluid
 - c. Intra cellular fluid
 - d. Control of movement of fluid from one compartment to another
7. Acid-base balance.
 - a. Mechanisms for maintenance
 - i. Buffers
 - ii. Respiratory
 - iii. Renal
8. Alterations in acid-base balance.
 - a. Acidosis
 - b. Alkalosis
9. Respiratory and urinary mechanism in maintaining acid-base balance.
 - a. Role differentiation.

UNIT V – Reproductive System

(6 theory/9 practical hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. discuss the functions of the reproductive system.
2. describe the stages of maturation of the reproductive organs.
3. discuss the organization of the male reproductive system, the organs, location, structure, and function.
4. state the composition of the seminal fluid.
5. trace the route of seminal fluid from its formation in the gonads to the exterior.
6. discuss the hormones of the male reproductive system and their functions.
7. explain the effects of testosterone on the male body.
8. discuss the male sexual response and hormonal control.
9. name the functions of the female reproductive system.
10. describe the location, structures and function of the female reproductive system.
11. explain the structure and function of the accessory glands and ducts of the female reproductive system.
12. describe the location, structure, and function of the mammary glands.
13. describe the hormonal control of breast development and lactation.
14. discuss the female reproductive cycle.
15. discuss the phases of the menstrual cycle.
16. discuss the hormones of the female reproductive tract and their effects on the menstrual cycle.
17. distinguish between menarche, climacteric, and menopause in terms of hormonal activity.
18. describe the stages of embryonic development.

19. describe the similarities and differences between the male and female reproductive systems.

Content:

1. Functions of the reproductive system.
 - a. Production of egg & sperm cells
 - b. Transportation & maintenance of egg & sperm cells
 - c. Secretion of sex hormones
 - d. Nurturing of the developing offspring
- A. Male reproductive system.
 1. Maturation of reproductive organs.
 - a. Definition of maturity
 - b. Stages of maturity
 2. Organization of the male reproductive system: location, structure, function.
 - a. Internal organs
 - b. External structures
 3. Seminal fluid.
 - a. Composition & route
 4. Male sexual response & hormonal control.
 - a. Erection
 - b. Orgasm
 - c. Ejaculation of semen
 5. Hormone regulation.
 - a. Follicle-stimulating hormone (FSH)
 - b. Luteinizing hormone (LH)
- B. Female reproductive system.
 1. Functions specific to the female reproductive system.
 2. Structures & functions of the female reproductive system.
 - a. External
 - b. Internal
 3. Mammary glands: location, structure, function, hormonal control.
 4. Female reproductive cycle.
 - a. Definition
 - b. Hormones
 - c. Phases
 5. Menstrual cycle.
 - a. Phases
 - b. Hormones & effects on female reproductive tract
 - c. Menstruation
 6. Hormonal activity & menarche, climacteric/menopause.
 7. Embryology.
 - a. Definition
 - b. Stages of development
 8. Physiology of the sex act.

- a. Nervous control
 - b. Stages
9. Foetal development.
10. Similarities & differences between the male & female reproductive systems.

METHODS OF DELIVERY:

1. Lecture/Discussion
2. Demonstration
3. Charts & Models
4. PowerPoint presentations
5. Individual & group assignments

Areas Used for Learning

1. Classroom
2. Library
3. Clinical Skills Laboratory
4. Laboratory

Learning Experiences

1. Laboratory exercises.
2. Observation at the post-mortem laboratory.
3. Use of diagnostic instruments of the cardiovascular system.

Required Skills

1. Identification of anatomical parts.
2. Auscultation of normal cardiac, respiratory and bowel sounds.
3. Measurement of blood pressure, pulse.
4. Use and interpretation of the ECG.
5. Urine testing.

METHODS OF ASSESSMENT:

- | | |
|--------------------------------|-----|
| 1. Lab practicum | 30% |
| 2. Written objective-type test | 40% |
| 3. Individual/group project | 30% |

RESOURCE MATERIAL:

Allen, C., & Harper, V. (2011). *Laboratory manual for anatomy & physiology*. Somerset, New Jersey: John Wiley & Sons.

Tortora, G. J., & Derrickson, B. H. (2012). *Introduction to the human body: The essentials of anatomy and physiology*. New York: John Wiley & Sons, Inc.

Websites:

EBSCOhost database- <https://www.ebscohost.com/>

Springer E-Books- <http://link.springer.com/>

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:	Health Informatics
COURSE CODE:	NHIN1101
CREDITS:	3
CONTACT HOURS:	45 (Theory)
PRE-REQUISITE(S):	
CO-REQUISITE(S):	
SEMESTER:	2

COURSE DESCRIPTION:

This course introduces the learner to basic knowledge of information technology, its application to the management of health care and the nurse's role in the process. The course also examines issues related to the protection of the privacy, confidentiality, and security of information in health care environments. Laboratory sessions include learning how to utilize computer technology for documentation, communication, Internet search and health care applications. The student will also develop additional skills through completion of assignments on a variety of software applications.

COURSE OUTCOMES:

Upon successful completion of this course, learners will be able to:

1. use appropriate nomenclatures, vocabularies, terminologies, ontologies, and taxonomies in relation to automated systems.
2. analyse the impact of informatics in health care delivery and health care providers.
3. examine issues of ethics, regulation, accreditation, and security of automated applications in health care.
4. integrate information technology (it) culture, processes, roles, related terminology, and applications in health care management and nursing practice and nursing education.

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. explain basic computer, hardware, software, and terms.
2. identify the categories of computers, their components, and functions.
3. describe the evolution of computer technologies, internet, and the world wide web (www).
4. discuss the internet and world wide web (www) terms and protocols.
5. identify the process required to access both the internet and worldwide web.
6. discuss services available on the internet and worldwide web.
7. discuss the ethical legal use of the internet.
8. discuss the meaning and functions of networks.
9. describe the term social media, uses, and applicable ethics.

Content:

1. Computer:
 - a. Definition
 - b. Evolution
 - c. Functions
 - d. Categories
2. Categories of computers:
 - a. Components & role
 - b. Hardware
 - c. Software
3. Definition:
 - a. Internet
 - b. Intranet
 - c. Extranet
 - d. Server
 - e. Satellite communication
 - f. Viruses & computer hackers
 - g. Information technology
4. Internet & Wide World Web (WWW):
 - a. Description
 - b. Terms & protocols
 - c. Structure
 - d. Portals
 - e. Accessing
 - f. Service
 - g. Security

- h. Legal & ethical issues for health care professionals
- 5. Types of networks:
 - a. Home Network (HN)
 - b. Local Area Network (LAN)
 - c. Wide Area Network (WAN)
 - d. Metropolitan Area Network (MAN)
- 6. Computer programmes & applications:
 - a. Microsoft Word
 - b. PowerPoint
 - c. Excel
- 7. Social media networks:
 - a. Types
 - b. Uses
 - c. Ethics governing social media.

UNIT II – Introduction to Health & Nursing Informatics (10 hours theory, 15 hours practical)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

- 1. define health care and nursing informatics.
- 2. discuss the distinction between data, information, and knowledge.
- 3. examine the use of e-health, telehealth and telenursing, social media networks to deliver health and nursing care at a distance.
- 4. analyze benefits and issues related to computer technology and electronic health records.
- 5. explore privacy, confidentiality, and security of information in electronic environments.
- 6. describe the standards use in electronic health records.
- 7. discuss existing national data storage facilities in health care and nursing.
- 8. apply computer technology in simulated patient care and nursing education situations.

Content:

- 1. Definition of health care informatics:
 - a. Biomedical informatics
 - b. Clinical informatics
 - c. Medical informatics
 - d. Nursing informatics
 - e. Public health informatics
 - f. Information science

- g. E-Service
- h. E-health
- i. Telehealth
- j. Telemedicine
- k. Telenursing
- 2. Social media networks.
- 3. Data, information & knowledge; differences.
- 4. Computer applications, issues, benefits & impact.
 - a. Health care facilities
 - b. Clinical nursing practice
 - c. Nursing administration
 - d. Nursing education
 - e. Nursing research
- 5. Health: categories, applications, issues, benefits & impact.
 - a. Electronic health records
 - b. Telehealth
 - c. Telemedicine
 - d. Telenursing
 - e. Consumer health information
 - f. Health knowledge management
- 6. Ethical & legal issues of electronics records.
 - a. Privacy & confidentiality of records
 - b. Copyright & use of materials on the Web
- 7. Standards in electronic health records.
- 8. Existing national data storage facilities in health care & nursing.
- 9. Impact of the internet on health care providers & patients.
- 10. Application of computer technology in simulated patient care & nursing education situations.

UNIT III – Health Informatics System

(10 hours theory, 15 hours practical)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

- 1. define terms applicable to health information system.
- 2. discuss the need for a health information system.
- 3. identify the types and use of data routinely collected in the health system.
- 4. identify essential public health data.
- 5. outline minimum data set for public health.
- 6. apply abbreviations and terminologies used in the health system appropriately.
- 7. discuss the recording and reporting process.
- 8. discuss ethical and legal issues of health systems records and reports.

9. discuss legal and ethical issues in using, designing, and managing health care information systems.

Content:

1. Definition of terms.
 - a. Health information system
 - b. Health data
 - c. Essential data
 - d. Minimum data set (MDS)
2. Need for health information system.
 - a. Policy formulation
 - b. Programme planning
 - c. Monitoring & evaluation of health system
 - d. Other
3. Types of data & uses:
 - a. Clinical
 - i. General
 - ii. Health programme related
 - b. Managerial
 - i. Personnel
 - ii. Financial
 - iii. Supplies
 - iv. Equipment
 - v. Other
4. Essential public health data:
 - a. Vital statistics
 - b. Morbidity
 - c. Other
5. Sources of public health data.
6. Public health minimum data set.
7. Abbreviations and terminologies used in health care.
8. Recording & reporting:
 - a. Purpose
 - b. Types
 - c. Principles of recording & reporting
 - d. Organization and presentation of report
 - e. Report writing in health care delivery
 - f. Ethical and legal issues of health system records and reports.

METHODS OF DELIVERY:

1. Lecture/Discussion
2. Group activities
3. Role Play/Simulation
4. Tutorials
5. Practical demonstration & return demonstration
6. Problem-based clinical scenarios

Areas Used for Learning

1. Classroom
2. Library
3. Clinical Skills Laboratory
4. Computer Laboratory
5. Health care facilities

Learning Experiences

1. Individual study guide activities
2. Laboratory sessions
3. Individual & group assignments
4. Visits to health care facilities for data collection

Required Skills

1. Using the Internet
2. Retrieving, & sending E-mail
3. Accessing Microsoft Windows XP/VISTA Operating System
4. Creating, Saving, Retrieving, and changing documents
5. Using Excel
6. Creating PowerPoint presentations
7. Using e-health technology & social media networks
8. Using computer technology in simulated patient and nursing education situations

METHODS OF ASSESSMENT AND EVALUATION:

- | | |
|---|-----|
| 1. Student presentation: Using information technology | 20% |
| 2. Group presentation: Security of health information | 50% |

3. Final Examination 30%
(25 MCQs and 5 ETQ questions to choose 3)

Required Reading:

1. Hebda, T., Mascara, C., & Czar, P. (2013). *Handbook of informatics for nurses and health care professionals*. Upper Saddle River, New Jersey: Prentice Hall Professional Technical Publishers.
2. Jones and Bartlett, Sudbury, M.A. *Microsoft Office Word 2007: Exam 77-601, Microsoft Official Academic Course, Microsoft Corporation*. Somerset, New Jersey: John Wiley & Sons. ISBN: 978-0-470-06948-6.
3. McGonigle, D., & Mastrian, K. (2012). *Nursing informatics and the foundation of knowledge*.
4. Microsoft Office Excel 2007: Exam 77-602, *Microsoft Official Academic Course, Microsoft Corporation*. Somerset, New Jersey: John Wiley & Sons. ISBN: 978-0-470-06949-3.
5. Microsoft Office PowerPoint 2007: Exam 77-603, *Microsoft Official Academic Course, Microsoft Corporation*. Somerset, New Jersey: John Wiley & Sons.
ISBN: 978-0-470-06951-6.

Recommended Reading:

EBSCOhost database

<https://www.ebscohost.com/>

Microsoft. <http://www.microsoft.com/en-us/default.aspx>

Williams B.K. & Sawyer (2009). *Using information technology*. New York: The McGraw-Hill Irwin. ISBN: 9780073516752.

<http://www.ehealthinfo.gov.au/>

<http://www.ehealthontario.on.ca/en/>

Springer E-Books

<http://www.springer.com>

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:

Communication I **Updated May 2016**

COURSE CODE:

COMM1101

CREDITS:

3

CONTACT HOURS:

45 (45 hours theory)

PRE-REQUISITE(S):

None

CO-REQUISITE(S):**SEMESTER:****COURSE DESCRIPTION:**

This course is designed to develop the community college learner's ability to write expository essays, 'projects or papers' and make oral presentations in varying contexts in and out of the classroom. It is hoped that this course will be used by learners to help them fulfil the academic evaluation requirements of the courses they will sit at this level and help them to become better communicators. The course gives learners practice in the manipulation of secondary sources of information to support their own ideas in writing and speech.

REQUIREMENTS FOR THE COURSE:

Access to if not your own Computer, access to the internet, books, journals, newspapers, magazines, a library membership, and an open mind hungry for knowledge.

COURSE OUTCOMES:

Upon successful completion of this course, learners will be able to:

1. demonstrate academic writing skills.
2. manipulate varied, credible, and reliable sources to present informed and supported points of view.
3. create competent expository essay.
4. produce competent oral presentations.

5. employ the APA style in their academic endeavours, writing, presentations, and research.

UNIT I – What is Communication

(8 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. explain the term communication.
2. identify ways in which selective factors influence the communication process.
3. describe five (5) techniques for effective communication.
4. explain transactional model of communication.
5. demonstrate efficient note taking using the Cornell Method.

Content:

1. Definition of communication.
2. Communication Process.
3. Factors influencing the communication process: age, sex, culture, family situations, religion, self-concept, education, etc.
4. Barriers to communication (Internal / External; semantic and language; Physical, psychological, physiological).
5. Effective communication techniques: listening, paraphrasing, direct questioning, clarifying, focusing, silence and other techniques.
6. The Cornell Method: http://lsc.cornell.edu/wp-content/uploads/2015/10/CornellNote_Taking-System.pdf

UNIT II – Language in the Caribbean Context

(7 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. explain the term ‘language’.
2. discuss the historical and social factors that have shaped the Caribbean language situation.
3. examine areas of divergence between Creole and Standard English.

Content:

1. What is a language.
2. Historical factors and social factors that affected the development of the Caribbean language situation.

3. Comparison of Standard English and Caribbean Creole- lexicon, semantics, phonology, morphology, syntax.

NB. Language used in text message and its departure from the standard form

UNIT III –Introduction to Oral Presentations

(10 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. describe the basic types of oral delivery.
2. deliver a 3–5-minute oral presentation.
3. use a PowerPoint or other visual aid in an oral presentation.
4. manage emotional anxiety during an oral presentation.

Content:

1. Types of Delivery:
 - a. Memorised
 - b. Manuscript
 - c. Impromptu
 - d. Extemporaneous
2. Basic Visual Aids, Charts, PowerPoint, Models.
3. Preparing a basic power point presentation.
4. How to overcome emotional anxiety.

UNIT IV –The Writing Process

(20 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. construct a thesis statement.
2. use connectives and transitional devices appropriately in the writing process.
3. incorporate research materials in the writing process.
4. construct well developed paragraphs.
5. use peer review and editing techniques to review written work.
6. use prewriting and planning strategies in the writing process.
7. use the APA referencing and in text citation in the writing process.
8. employ post writing strategies in the writing process.

Content:

1. Introduction to paragraph development.
2. Topic Sentences.
3. Supporting Sentences: details such as examples, illustrations, statistics, facts.
4. Concluding sentence/clincher.
5. Cohesion, unity, adequacy, and completeness.
6. Pre-writing: Planning, idea generation and research.
7. Writing:
APA Referencing:
 - a. Sources of information
 - b. In-text citations
 - c. List of references
 - d. Plagiarism
8. Post writing: Publishing.

METHODS OF ASSESSMENT AND EVALUATION: Continuous Assessment

- | | | |
|----|---|-----|
| 1. | Course work/Test/ Quizzes | 35% |
| 2. | Portfolio: | 50% |
| | a. Bibliography | |
| | b. Formal Outline for the essay | |
| | c. 1 st Draft | |
| | d. Peer Review | |
| | e. Final Draft | |
| 3. | Individual oral presentation lasting 3-5minutes | 15% |

RUBRICS

Learner Presentation Rubric

Oral Presentation Rubric v 2	Good	Average	Needs Improvement	Sub Total	Total
Delivery; Clarity of voice Projection of Voice	3	2	1		
Control of Emotional Anxiety Breath Control, Para Language, Movement	3	2	1		
Integration of Visual Aid	3	2	1		
Time Management Speech presented within the stipulated time	3	2	1		
Content Presentation of a Main Idea Development of at least 1 point 1 point 2 sub points	3	2	1		
Organization Introduction: attention getter, topic, thesis, body: one point adequately developed, conclusion: restate of thesis / summation	3	2	1		/15

Review Rubric can be used for stage reviews, peer review of draft essay

. Feature	E V G G A F P	Comment
Thesis State.	6 5 4 3 2 1	Main idea, Major Points
Outline	6 5 4 3 2 1	Logic, planning, format
Sources	6 5 4 3 2 1	Reference page, in text citation
Paragraphing	6 5 4 3 2 1	Emphasis, Coherence, Cogency, Unity, Organisation/Order
Transitions	6 5 4 3 2 1	Internal summaries, previews, Signposts, conjunctions
Introduction	6 5 4 3 2 1	Thesis statement, attention getter, if arg- + opinion
Body	6 5 4 3 2 1	Paragraphs well developed clear rhetorical Organisation
Conclusion	6 5 4 3 2 1	No new points, summarize, restate, tie up , the body and intro
Tone	6 5 4 3 2 1	Objective-expository, subjective- persuasive-
Spelling	6 5 4 3 2 1	
Subject Verb	6 5 4 3 2 1	
Tense	6 5 4 3 2 1	
Punctuation Capitalisation	6 5 4 3 2 1	
Worldliness	6 5 4 3 2 1	
Sentence Cons. Parallelism	6 5 4 3 2 1	
Reviewer's comment		Lecturer's comment

Expository Grade Breakdown

I. Content

– 10 marks

10 – 9 V Good

Clear development of main points

Rational reasoned coherent presentation of analysis

At least three points must be adequately developed with corresponding supporting points To get full marks

8- 7 Good

Clear development of main points

Rational reasoned coherent presentation of analysis

Less than three points adequately developed with corresponding supporting points

6-5 Average

Clear development of main points

Rational reasoned coherent presentation of analysis

Less than three points

Points not adequately developed with corresponding supporting points

4-1 Below Average

No development of main points

No supporting points

Incoherent or non-existent analysis

II. Organization

- 8 marks

- a) Paragraphing - 1 mark
- b) Rhetorical strategy – analysis, cause and effect, classification, comparison, definition, illustration - 2 marks
- c) Introduction – that contains a thesis, which includes:
 - 1. 3- 5 main points of the essay,
 - 2. main idea,
 - 3. attention getter, - 3 marks
- d) Conclusion
 - 1. Recap, summation, restating
 - 2. No new points - 2 marks

III. Expression/Use of English

-7 marks

- a) Academic Grammar, Word Choice, Tone - 2 marks
- b) Punctuation - 2 marks
- c) Subject Verb Agreement - 2 marks
- d) Connectives - 1 mark

ASSIGNMENT ELECTRONIC SUBMISSION

These assignments should utilize Turnitin software, where applicable, If that is not available your teacher will instruct you of an alternate electronic means of submission. As your course evaluation is ongoing, students are encouraged if not required to send sections of their assignments to their lecturers for review, generally speaking you are taught a task this week the homework is required a minimum of 1 day before the first class in the next or following week.

This is so for several reasons:

1. Based on the submissions the teacher can tailor or review a section that the class may have misunderstood, for use in the next class.
2. The learner and teacher can submit their assignment and comment at any time convenient to them before the next class.

Electronic submissions are recommended because it facilitates the advantages named above as well as it: ...

1. cuts printing costs
2. and is a record of submission

NON-SUBMISSION

Please note that if you miss a submission deadline your grades may be lower than a student who consistently sends in his submission on time as your lecturer may penalise you or refuse to mark the specific submission. It is recommended that you email your lecturer early seeking permission to submit a stage of an assignment late. Do remember lecturers are accommodating but it is at their discretion that they allow a late submission.

Please be aware however that study is a reality of deadlines and pressure to meet deadlines.

Remember that you have to complete all stages of the course as well as the final projects at the level of competence to pass the course.

RESUBMISSION

The course is designed to develop learner competence thus a student is allowed one resubmission if they fail a submission or submission is below competence. However, in such a case the learner's grade for that specific assignment is the average of the two submissions. As the course is competency based, for a learner to pass they have to demonstrate competence in both stage and final product. That is all stages of the essay writing process, expository and argument and the presentation making process, as well as in the expository essay, argumentative essay, and presentation.

Required Text

The majority of units will be taught using a variety of material prepared by your teacher; many teachers will give you a website, page url or blog containing the material. Some may recommend chapters or pages in textbooks that best explain specific areas. We recommend that you copy or read these recommended excerpts which usually are available in your school library. However, an essay writing manual and there are many, for eg A Writers Guide: a handbook for writing and research by Maimon & Perez will help a student

immensely. Not only because it provides good information on the essay writing process but also because it can be used as a resource for referencing.

Blooming with the Pouis 2009 Ramsay et al, introduction p xxi, Introduction to Argument p 131.

Writing in English, 1999, McDonald et al; Chapters 10, 18 -24.

The Art of Public Speaking, 2007 Stephen Lucas; Chapters 10,12,13,14.

All the texts named above have been referenced in the syllabus guide, however they can and should be supplemented by other texts and approaches to the topics.

Recommended Texts

Any college essay writing text

NB: LEARNERS who FAIL this course are required to do an automatic RE-DO

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:

Introduction to Psychology I

COURSE CODE:

PSYC1111: Previous Code (PSYC1101)

CREDITS:

3

CONTACT HOURS:

45 (45 hours theory)

PRE-REQUISITE(S):

None

None

CO-REQUISITE(S):**SEMESTER:****COURSE DESCRIPTION:**

This course is designed primarily to provide students with a general understanding and appreciation of human behaviour and its impact on social and business relationship. More specifically, the course will cover approaches to the study of psychological, biological, and developmental bases of behaviour, perception, attitude, motivation, conflict and change and stress management.

COURSE OUTCOMES:

Upon successful completion of this course, students should:

1. understand psychology as an area of study.
2. develop an understanding of the theories and the role of the theorists in the study of psychology.
3. understand the biological and developmental bases of behaviour.

Learner Outcomes:

At the end of this unit, you will be able:

1. define and use relevant definitions relating to psychology and its areas of study.
2. discuss the eight critical thinking guidelines in psychology.
3. examine the five major approaches to the study of psychology and their proponents.
4. differentiate among the various approaches in (3) above.
5. use the various psychological theories of development to explain behaviour.
6. identify the methods and tools used by psychologists to investigate psychological issues.

Content:

1. The Nature of Psychology:
 - a. Psychology- Definition (scientific study)
 - b. As a behavioural science: relevance to career fields
2. The eight critical thinking guidelines in psychology.
3. Approaches and application: Structuralism, Functionalism, Gestalt, Biological, Cognitive, Behavioural, Humanistic, Evolutionary, Psychodynamic/Psychoanalytical. Psychological thinkers and their theories: Freud, Erikson, Piaget, Watson, Skinner, Maslow, Pavlov, Rogers.
4. Research methods: tests, experiment, survey, case study, observation, correlation.

Suggested Activities:

1. Apply critical thinking guidelines to popular, as well as psychological claims.
2. Class discussion on how the contemporary perspectives in psychology would explain crime and violence in Jamaica.

Learner Outcomes:

Upon successful completion of this unit, students should be able to:

1. describe the divisions of the nervous system and explain how behaviour is driven by the nervous system.
2. explain the relationship among genes, environment, and behaviour.

3. define developmental psychology.
4. discuss the factors governing development of behaviour.
5. explain and compare the different approaches to psychological development.
6. use the theories of psychological development to explain human behaviour.
7. relate the stages of psychological development to types of behaviour.

Content:

1. Biological Bases of Behaviour:
 - a. The nervous system: CNS, PNS etc.
 - b. Genetic influences on behaviour.
2. Developmental Psychology: definition.
 - a. Environmental influences on behaviour: nature/nurture debate.
 - b. Factors that influence development.
 - c. Theories of development: Kohlberg (moral reasoning); Freud (psychosexual); Piaget (cognitive); Erikson (psychosocial)

Suggested Activities:

1. Class discussion, wherein students are asked to share any personal experience that supports any stage of Erik Erikson's, Lawrence Kohlberg's, or Freud's theories.
2. Discussions on the level of morality typically demonstrated in Jamaica.

UNIT III –Perception

(3 hours)

Learner Outcomes:

Upon successful completion of this unit, students should be able to:

1. define and use the important terms relating to perception.
2. assess the relationship between perception and behaviour.

Content:

1. Perception (definition):
 - i. Sensation
 - ii. Selective attention
 - iii. Illusion
 - iv. Perceptual organization

2. Factors influencing perception:
 - i. Motives
 - ii. Interests
 - iii. Person
 - iv. Target
3. Illusion:
 - i. Constancies (size, shape, brightness, colour)
 - ii. Figure ground
4. Stereotyping.

Suggested Activity:

A class discussion on the movie “The Matrix” and the concept of perception without sensation.

Learner Outcomes:

Upon successful completion of this unit, students should be able to:

1. formulate working definition of attitude.
2. examine the components of attitude.
3. explain the development of:
 - a. cognitive dissonance
 - b. prejudice
 - c. stereotyping

Content:

1. Attitude (definition).
2. Components and formation of attitude.
(Affective, Behavioural, Cognitive)
3. Changing Attitudes:
 - a) Cognitive Dissonance
 - b) Prejudice
 - c) Stereotyping

Suggested Activity:

Examine a case in which cognitive dissonance was evident and explain how attitudes were changed in the situation.

Learner Outcomes

Upon successful completion of this unit, students should be able to:

1. explain the concept personality.
2. differentiate between two theories of personality.
3. assess the importance of positive self-concept to the development of self-esteem.

4. identify the different types of defence mechanisms and explain how these might be used in various situations.

Content:

1. Personality (definition)
2. Theories of Personality:
 - i. Psychoanalytic (Freud)
 - ii. Humanistic (Rogers)
 - iii. The Big Five Personality (Eysenck)
3. Development of self-concept/ self-esteem.
4. Defence mechanisms (types and uses).

Suggested Activity:

Students should assess their own personality using the tenets of one of the theories of personality.

UNIT VI – Motivation

(5 hours)

Learner Outcomes:

Upon successful completion of this unit, students should be able to:

1. explain and use correctly the concepts relating to motivation.
2. apply theories of motivation to the explanation of behaviour in given situations.

Content:

1. Motivation:
 - a. Definitions and concepts:
 - i. Drive
 - ii. Needs
 - iii. Motives
 - b. Theories of motivation:
 - i. Abraham Maslow: Maslow Hierarchy of Needs
 - ii. Frederick Herzberg: Two Factor Theory
 - iii. David McClelland: Theory of Needs

Suggested Activity:

Class discussion on how one of the theories may be applied in the education system.

UNIT VII – Conflict and Change

(6 hours)

Learner Outcomes

Upon successful completion of this unit, students should be able to:

1. Conflict:
 - a. define and use correctly the concepts relating to conflicts.
 - b. assess potential causes of conflicts as they operate in given situations.
 - c. apply appropriate conflict resolution techniques to given situations.
 - d. evaluate the effects (positive and negative) of conflict on relationships.
2. Change:
 - a. define and use correctly the concepts relating to change.
 - b. identify and describe different agents of change.
 - c. apply the approach-avoidance theory in situations in Jamaica.
 - d. give reasons for resistance to change.
 - e. identify and utilize techniques for reducing resistance to change.

Content:

1. Conflict and Change:
 - a. Conflict:
 - i. Definition.
 - ii. Lewin's Approach-Avoidance Theory/ Types of Conflict (approach-approach, avoidance-approach, avoidance-avoidance, double approach-avoidance).
 - iii. Causes of conflict.
 - iv. Conflict resolution techniques- collaboration, compromise, competition, avoidance, accommodation.
 - v. Effects of conflict- positive and negative.
2. Change:
 - i. Definition.
 - ii. Change Agent- role, types (internal and external).
 - iii. Reasons for resistance to change.
 - iv. Techniques for reducing resistance to change- communication/ education etc.

Suggested Activity:

Resolve a conflict using one conflict resolution technique examined.

UNIT VIII – Stress**(3 hours)****Learner Outcomes:**

Upon successful completion of this unit, students should be able to:

1. define the concept of stress.
2. identify causes of stress in given situations.
3. identify and explain the symptoms of acute stress.
4. use the theories of psychological development to recommend techniques for managing stress.

Content:

1. Stress:
 - a. Definition
 - b. Causes
 - c. Symptoms of acute stress
 - d. Stress Management Techniques:
 - i. Relaxation
 - ii. Exercise
 - iii. Time management

Suggested Activity:

Students demonstrating through roleplay the symptoms of acute stress and a stress management technique.

METHODS OF DELIVERY

This course will be administered through the delivery of lectures and interactive tutorials covering a wide range of topics designed to facilitate practical opportunities for learning and application of psychological techniques.

1. Lectures
2. Case Studies and Analysis
3. Class Work
4. Class Quizzes

5. Video Presentations
6. Discussions
7. Research
8. Simulation
9. Role Play

METHODS OF ASSESSMENT AND EVALUATION

1.	Common Coursework (Mid-semester)	10%
2.	College Coursework (Project)	20%
3.	Presentation	10%
4.	Final Examination (two hours)	60%

RESOURCE MATERIAL:

Prescribed Text:

American Psychological Association (APA) - www.apa.org

Rathus, S. A. (2002). *Essentials of psychology*. (7th ed.). FL: Harcourt Publishing.

Wade, C. & Tavris, C. (2010). *Psychology* (10th ed). Upper New Saddle, NJ: Pearson Education.

www.ebscohost.com

**THIS PAGE IS INTENTIONALLY LEFT
BLANK**

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME: Research Methodology

COURSE CODE: RMTD3401

CREDITS: 3

CONTACT HOURS: 45 (45 hours theory)

PRE-REQUISITE(S): None

CO-REQUISITE(S): None

SEMESTER:

COURSE DESCRIPTION:

This course will help the learner to choose research topics carefully and to use their research skills to enhance the world and its inhabitants. The learners will be exposed to scientific means of collecting and presenting data. Thus, the course will include research questions, hypothesis testing, questionnaire, observation techniques, descriptive statistics etc.

COURSE OUTCOMES:

Upon successful completion of this course, learners will be able to:

1. use terminologies associated with research methods.
2. explain the different research approaches.
3. review research articles.
4. evaluate ethical issues in research methods.
5. learn the different research designs.
6. apply different sampling methods in research.
7. use different methods to collect research data.
8. analyse research data.
9. write a research proposal.

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. explain jargons used in research methods.
2. identify the different research approaches.
3. differentiate between quantitative and qualitative research approaches.
4. describe steps in a quantitative and qualitative research designs.
5. identify at least five ethical issues in research.
6. describe the ethical standards in research methods.
7. identify at least 10 dos and don'ts in using the APA writing style.
8. state at least five errors related to the use of APA in a given article.

Content:

- 1) Definition of terms used in research methods:
 - a) Research
 - b) Independent and dependent variables
 - c) Hypothesis
- 2) Introduction to research approaches:
 - a) Quantitative methods
 - b) Qualitative Methods
 - c) Mixed methods
- 3) Ethical considerations in research.
- 4) Writing style (APA).

Suggested Activities:

1. Find an area of research interest.
2. Read materials on research approaches.

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

- 1) find journal articles and books in the library.

- 2) write reference information on an index card.
- 3) find a research problem using journal articles.
- 4) state a research topic.
- 5) state a research problem.
- 6) write at least three research questions and three research objectives.

Content:

- 1 Using library resources.
- 2 Documenting sources.
- 3 Finding a research problem.
- 4 Stating a good research topic.
- 5 Stating research problem.
- 6 Stating research questions/objectives.

Suggested Activities:

1. Library visit
2. Locate on-line databases
3. Find articles related to research topic

UNIT III –Research Design

(6 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

- 1) select three (3) quantitative research designs.
- 2) select three (3) qualitative research designs.
- 3) identify at least two mixed methods designs.
- 4) assemble two research articles for the following: quantitative, qualitative, and mixed methods design.
- 5) justify when to use different research designs.

Content:

- 1) Quantitative research designs:
 - i) Experimental and quasi experimental studies
 - ii) Causal comparative studies
 - iii) Descriptive: cross-sectional and longitudinal studies
 - iv) Correlational and predictive studies

- 2) Qualitative research designs
 - i) Ethnography
 - ii) Case study
 - iii) Grounded theory
 - iv) Phenomenology
- 3) Mixed methods design (quantitative and qualitative research)

Suggested Activities

- 1) Locate two research articles for the following: quantitative, qualitative, and mixed methods design.
- 2) Select a research design for a given topic.

UNIT IV – Sampling Methods

(6 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. explain jargons used in sampling:
 - a population
 - b sample
 - c unit of analysis
 - d gap
 - e sampling error
2. summarize the different types of probability sampling methods:
 - a simple random
 - b stratified
 - c systematic
 - d cluster
3. differentiate between the types of non-probability sampling methods:
 - a snowballing
 - b purposive
 - c continence
 - d quota
4. apply formula for estimating sample size
5. calculate sample size using the formula provided

Content:

1. Sampling terms:
 - a. Population

- b. Sample
- c. Unit of analysis
- d. Gap
- e. Sampling error
- 2. Probability sampling methods:
 - a. Simple random
 - b. Stratified
 - c. Systematic
 - d. Cluster
- 3. Non-probability sampling methods:
 - a. Snowballing
 - b. Purposive
 - c. Convenience
 - d. Quota
- 4. Estimating sample size

Suggested Activity:

1. Determine sample size for a quantitative study.

UNIT V – Data Collection Methods

6 hours

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. explain the different data collection methods.
2. examine two qualities of a good data collection instrument.
3. construct a questionnaire and an interview schedule.
4. judge the importance of reliability and validity qualities in data collection instruments.

Content:

1. Data collection methods:
 - a. Questionnaires
 - b. Interviews
 - c. Observation
 - d. Document review

2. Qualities of a good instrument:
 - a. Reliability
 - b. Validity
3. Construction of questionnaire and interview schedule.

UNIT VI – Data Analysis Method s

(6 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

- 1) explain the use and importance of descriptive statistics.
- 2) differentiate between descriptive and inferential statistics.
- 3) explain the concepts of distribution of scores, and outline how distributions differ among themselves.
- 4) use measures of central tendency and variability to describe a set of scores.
- 5) compute measures of central tendency in given situations.
- 6) compute range, standard deviations, and variance explaining the importance of these.
- 7) draw the normal curve from given data and explain why the curve is important to the research process.
- 8) explain the importance of inferential statistics to the research process.
- 9) explain the concept of statistical significance and state its importance to research.
- 10) apply basic types of statistical tests in different given situations.
- 11) present data in appropriate visual form.

Content:

1. Data analysis for quantitative research designs.
2. Data analysis for qualitative research designs.

UNIT VI –The Research, Report and Proposal

(12 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. use the principles and techniques of social investigation to conduct and present a research proposal.

Content:

- 1) Components of a research paper/project
- 2) Chapter One: Introduction
- 3) Chapter Two: Literature Review
- 4) Chapter Three: Research Methods
- 5) Chapter Four: Results
- 6) Chapter Five: Conclusion and Recommendations
- 7) References
- 8) Appendices
- 9) The Research Report:
 - a. Organizing the written report
 - b. Abstract
 - c. Introduction
 - d. Review of literature
 - e. Methodology
 - f. Presentation and Interpretation of data
 - g. Discussion of Findings
 - h. Conclusions and Recommendations
 - i. Appendices
 - j. Bibliography

Research Method Assessment Rubric

<i>F. WORK</i> = 0-39	<i>D. WORK =40 -44</i>	<i>C. WORK=45-64</i>	<i>B. WORK=65-79</i>	<i>A. WORK=80-100</i>
No reasonable attempt made to fulfil assignment.	Marginal attempt to address theory.	Paper addresses assigned theory.	Paper clearly addresses assigned theory.	Paper addresses theory with originality.
	May or may not have hypothesis or research statement.	Hypothesis or question unclear but operational definition attempted.	Hypothesis or question clear, but definition not operationally defined.	Hypothesis or question clear and operationally defined.
	Literature review unrelated to research topic.	Some of literature review related to topic.	Most of literature review clearly related to topic.	Entire literature review relates topic to previous studies. Includes electronic and other sources
	May or may not include sampling method; little or no attempt to explain or apply.	Sampling not applicable, not accurate, but attempt at explanation, limitations unclear.	Sampling method explained, mostly accurate, may not be applicable but limitations noted.	Sampling method explained, accurate, applicable, and limitations noted.
	Unclear method or method not appropriate for question or hypothesis.	Method appropriate, but capabilities and limitations not accurate.	Method appropriate, capabilities and limitations of method mostly accurate.	Method appropriate, capabilities and limitations of research method accurate.

	Results unclear little or no statistics apparent (if qualitative); application of statistics not accurate; little or no quotations from interviews (if quantitative)	Presentation of results limited in use of statistics and application (if quantitative) or quotations (if qualitative) to support.	Presentation of results use clear and accurate application of statistics (if quantitative) or appropriate, clear quotations (if qualitative).	Outstanding application and explanation of statistics (if quantitative) or outstanding use of quotations (if qualitative).
	No graph or charts	Graphs or charts attempted to explain results (if quantitative)	Clear graphs and charts; explaining results (if quantitative)	Outstanding graphs and charts explaining results (if quantitative)
	Little or no analysis of results	Analysis attempted but unclear.	Analysis coherent and focused.	Analysis extremely coherent and focused.
	May or may not have a conclusion.	Paper has a conclusion.	Paper has a clear conclusion.	Clear conclusion with ideas for further research.

METHODS OF DELIVERY:

1. Lectures
2. Case Studies and Analysis
3. Presentations
4. Discussions
5. Demonstration
6. Proposal Writing
7. Research including literature review

METHODS OF ASSESSMENT AND EVALUATION: Continuous assessment

The Research Proposal using APA or as directed by the facilitator. Students will select a research topic and develop a research proposal with the supervision of the facilitator. This research proposal will be used as the foundation for their seminar or Research Paper in their area of specialization.

- | | |
|---|-----|
| 1. Literature Review and/Article Review | 30% |
| 2. Oral Presentation | 10% |
| 3. Research Proposal (Written) | 60% |

RESOURCE MATERIAL:

Prescribed:

Boxhill, I., Chambers, C., & Wint, E. (1997). *Introduction to Social Research, with applications to the Caribbean*. Jamaica: Canoe Press.

Leedy, P., & Ormrod, J. E. (2005). *Practical Research Planning and Design* (latest edition). NJ: Prentice Hall.

Salkind, N. J. (2008). *Exploring Research* (latest edition). NJ: Prentice Hall.

THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

COURSE NAME:	Fundamentals of Information Technology
COURSE CODE:	ITEC1104
CREDITS:	3
CONTACT HOURS:	75 (30 hours theory, 45 hours practical)
PRE-REQUISITE(S):	None
CO-REQUISITE(S):	None
SEMESTER:	

COURSE DESCRIPTION:

This course is designed to provide learners with a comprehensive knowledge of the application of computers in different organizations. It includes a thorough introduction to computers and information technology, information systems, computer networks and systems security. It also aims at equipping learners with practical operating system, word processing, presentation, spreadsheet, database, and Internet search techniques skills.

COURSE OUTCOMES:

Upon successful completion of this unit, learners should:

1. explain the components of the computer system.
2. demonstrate an understanding of Information Technology principles.
3. explain the various software and their functions.
4. appreciate the need for data and information in a technology environment.
5. explain the types of information systems used in the business environment.
6. explain the concepts of data transmission in various networking environments.
7. explain computer threats and counter measures for networked computer systems.
8. apply information technology principles in various fields.
9. evaluate Information Technology developments, trends, and ethical implications.
10. explain sustainability issues related to technology.

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. state benefits of Information Technology.
2. differentiate between categories of computers.
3. explain the purpose of components in the system unit.
4. select appropriate input, output and storage devices for a given situation.
5. explain the social, legal, ethical, and economic implications of information technology.
6. outline the health issues relating to the use of technology.
7. state the long-term effect that technology has on the environment.
8. discuss emerging technologies.

Content:

1. Definition - information technology, definition of computer system.
2. Benefits of information technology – speed, consistency, reliability, communication, storage.
3. Categories –Mainframe, Super, Microcomputer (mobile, personal), Minicomputer/Midrange.
4. Components of the system unit:
 - a. Memory – RAM, ROM, PROM, EPROM, EEPROM, Cache.
 - b. CPU – Parts and their functions (ALU, CU, register), machine cycle.
5. Select appropriate input, output and storage devices for a given situation.
 - a. Storage devices: magnetic, optical, and flash .
 - b. Storage: Units of measurement for storage media – bit, byte, KB, MB, GB, TB.
 - c. Input: Categories – keyed (keyboard), pointing (mouse, trackpad, trackball, touchscreen, stylus, light pen), source data entry (scanner, barcode reader, OMR, OCR, MICR), multimedia (microphone, camera), biometric (fingerprint scanner, retinal scanner)
 - d. Output:
 - i. Produces hard copy/Tangible output e.g. impact and non-impact printers.
 - ii. Produces soft copy/Intangible output e.g. monitors, speakers, projectors.
 - e. Input/output devices.
 - f. Multi-functional devices.

6. Social, legal, ethical, and economic implications of the introduction of computer-based systems on individuals, organizations and society.
 - a. Social – social networks, netiquette
 - b. Legal – computer crime, identity theft, privacy, plagiarism, copyright infringement, libel
 - c. Ethical – academic integrity, software piracy, pornography, Ten Commandments for Computer Ethics (Computer Ethics Institute of the Brookings Institution)
 - d. Economic – cost of access, virtual companies & taxation, job creation, job loss
7. Health Issues and the environment
 - a. Ergonomics
 - i Common health issues – e.g. Carpal Tunnel Syndrome
 - ii Proper posture while using a computer
 - iii Ergonomic devices – e.g. keyboard, mouse
8. State the long-term effect that technology has on the environment
 - a. Green Computing
 - i Energy consumption of computers, Energy efficient computing, Renewable energy (– solar, wind etc.), Paperless office, Recycling
 - ii Purpose of organizations such as Environmental Protection Agency (EPA)
 - iii Proper disposal of equipment
9. Emerging Technologies (under three years old).

UNIT II – History of Computers

(1 hour)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. discuss the history of computers.

Content:

1. History: Generations (From the 0th generation (abacus) to the present)

UNIT III – Software

(3 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. define the term software.

2. distinguish between application software and system software.
3. differentiate between an operating system and a utility programme.
4. list examples of operating system.
5. list categories of utility programmes.
6. explain the functions of an operating system.
7. discuss emerging technologies (software under three years old).

Content:

1. Definition; Software.
2. Distinguish: system software, application software.
3. Distinguish: utility and operating system.
4. Examples of operating systems: e.g. Unix, MS-Windows, DOS, Linux, Mac OS etc.
5. Categories utilities – file compression, diagnostic, backup, anti-virus, disk cleaner etc.
6. Functions of an operating system-booting, user interface, resource management, managing memory, file management, task management etc.

UNIT IV – Data and Information

(4 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. distinguish between data and information.
2. explain the desired characteristics of information.
3. define information systems.
4. describe the features of the various information systems used at the various levels of an enterprise.
5. recommend an appropriate type of information system for a given situation.

Content:

1. Definition of data and information.
2. Desired characteristics of information: accuracy; clarity; conciseness; user relatedness; relevance; timeliness.
3. Definition of Information Systems.
4. General systems: (definition, level, uses, inputs, outputs)
 - a. Management Information System (MIS)
 - b. Expert Systems
 - c. Decision Support System (DSS)
 - d. Transaction Processing System (TPS)

- e. Control and Monitoring Systems (CMS)
 - f. Executive Information Systems (EIS)
 - g. Knowledge Management Systems (KMS)
5. Functional units of an enterprise (local and international), the information systems used and their features - (definition, level, uses, inputs, outputs).
- a. Human Resource – Human Resource Information Systems.
 - b. Accounting and Finance – AR, AP, Payroll, General Ledger, Investments, Tariffs.
 - c. Engineering and Product Development – CAD/CAM, Operations and Process Management System.
 - d. Sales and Marketing – POS, inventory, ordering, sales force automation, marketing surveys.
 - e. Distribution – logistics, Supply Chain Management System, Transportation Management System.
 - f. Customer Service – Customer Information Management, Customer Relationship Management System (CRM).

UNIT V – Database Management Systems

(2 hours)

Learner Outcomes:

Upon successful completion of this unit, learners should be able to:

- 1. explain the importance of database management systems (DBMS).
- 2. describe features common to most DBMS.

Content:

- 1. Importance of database management systems.
 - a. Definition of database, DBMS.
 - b. Examples of DBMSes – Oracle, MySQL, MS-Access.
 - c. Advantages – less redundancy, easier and faster access, improved data integrity, security, availability, extensibility.
 - d. Disadvantages – inconsistencies, complexity, breach of confidentiality.
- 2. Features common to most DBMSes.
 - a. Table - character, field, data type, record, primary key.
 - b. Forms, queries, reports.
 - c. Backup

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. explain the term network.
2. state the advantages and disadvantages of networks.
3. describe different types of network classifications.
4. identify the role of basic network hardware required for successful communication.
5. identify various wired and wireless transmission media.
6. select wired or wireless transmission media for given situations.

Content:

1. Definition of networks.
2. Advantages of networks – faster communication, data security, sharing of resources, control of data and resources disadvantages of networks – identity theft, risk of threats (e.g. hackers, viruses), cost
3. Networks Classifications.
 - a. Local area networks, wide area networks, metropolitan area networks.
 - b. The role of networks (Internet, intranet and extranet) in area of specialization.
3. Network Hardware
 - a. Network interface card, hub, server, router, switch, firewall, wireless access point (WAP), modem.
4. Transmission media- appropriate use in a given situation (advantages disadvantages).
 - a. Wired – twisted pair, coaxial, fibre optic
 - b. Wireless – broadcast radio, cellular radio, microwave, satellite, Bluetooth, Wi-Fi.

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. explain the concept of computer risk.
2. explain the concept of risk management.

3. describe different types of computer risks.
4. apply risk management strategies to counter computer risks.

Content:

1. Definition- risk, computer risk, risk management.
2. General Risk Categories - human error; technical error; virus; natural disasters; unauthorized access and use; theft and vandalism.
3. Risk Management – definition of; types of risk management [access codes and passwords; audit trails; log systems; anti-virus software; encryption; physical security measures; backup and recovery procedures, firewall, UPS, surge protectors].

UNIT VIII – Office Automation

(2 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. state the purpose of automation.
2. recommend telecommunication technology(ies) for a given situation.

Content:

1. Definition and purpose of Office Automation.
2. Application of office automation in various sectors: travel & tourism; education; banking; home; retail.
 - a. Technologies – facsimile; voice mail; voice messaging; telemarketing; teleconferencing; video conferencing, telecommuting; electronic funds transfer; e-commerce; electronic mail, cloud computing

Fundamentals of Information Technology – (Lab Modules)

ITEC1104

COURSE OUTCOMES:

Upon successful completion of this unit, learners will be able to:

1. gain experience in the use of the world wide web.
2. explain how to perform basic operations of a computer system.
3. explain how to prepare business letters, documents and term papers using a formal document preparation style.

4. explain how to use the spreadsheet software to perform various mathematical calculation and conduct analysis on data.
5. show appreciation for presentation software.
6. explain how to use database management software.

UNIT I – Internet and the World Wide Web

(3 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. use a web browser to access a web page.
2. use advanced search features to access information on the internet.
3. send and receive e-mail.

Content:

1. Using a browser:
 - a. Going to a specific URL, viewing, and clearing the history, creating bookmarks, opening a new tab.
2. Using a search engine:
 - a. Basic search.
 - b. Advanced search (wildcards (? *), inclusion and exclusion operators (+, -),
3. Sending and receiving email:
 - a. Attachments, reply, reply to all, copying, forwarding, identifying the source of an email.

UNIT II – Word Processing

(12 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. use word processing interface.
2. insert objects into a document.
3. format texts in a document.
4. apply page formatting techniques.
5. use mail merge to create professional documents.
6. use the APA or other writing styles to prepare documents.
7. manipulate data in tables.
8. use word processing templates.
9. print documents created.

Content:

1. Interacting with the ribbon (including hiding and displaying the ribbon)
2. Inserting Objects: clipart, pictures
3. Text Formatting:
 - a. Alignment: Left, Centre, Right, Justify
 - b. Formatting: Bold, Italics, Underline, Subscript, Superscript, Font sizes and styles
 - c. Copy and paste text, moving text
 - d. Find and replace
 - e. Spacing between paragraphs
 - f. Spell checks
 - g. Indentation
 - h. Use various bullets and numbering techniques (Insertion and customization)
4. Page Formatting:
 - a. Page setup – Set margins, Paper size, page orientation, Hard and soft page breaks, arrange data in columns (Multiple columns, Column width, Converting a single column to multiple columns, Converting multiple columns to single columns, Arranging columns for even and odd pages)
5. Creating a professional letter
 - a. Letter formats
 - b. Mail merging
6. Preparing a term paper (using APA, MLA, or any such standards):
 - a. The cover and title page
 - b. Formatting Paragraph: first line indent, paragraph indent, line spacing
 - c. Generating Tables of Content
 - d. Headers and footers (including page numbers)
 - e. Quotations – short and long
 - f. Footnotes
 - g. Creating reference entries
 - h. Citations
7. Tables:
 - a. Creating tables, Formatting tables: Merging cells, Splitting cells, Shading cells, Cell borders
Formulas: Sum, Product, Max, Average, Number formats, Text direction
8. Templates - business card, brochures
9. Printing:
 - a. Choosing a printer, printing single and multiple, Selection print quality, printing multiple copies of the same document.

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. create a presentation
2. run a presentation
3. modify a presentation
4. print a presentation
5. conduct a professional presentation

Content:

1. Creating a presentation/slideshow.
2. Run a presentation.
3. Viewing and editing presentations.
4. Working with slides:
 - a. Inserting new slides
 - b. Inserting duplicate slides
 - c. Deleting slides
 - d. Rearranging slides
 - e. Changing the design and the background
5. Working with hyperlinks.
 - a. Adding a hyperlink
6. Working with Graphics/Video/Sound (audio clips):
7. Working with animation: Customized, Timing.
8. Printing Presentation:
 - a. Single Slides, Handouts, Notes Page

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. use spreadsheet interface.
2. apply page formatting techniques.
3. use formulas and functions to analyse data.
4. sort data in ascending and descending order.

5. format data.
6. use a formula to manipulate data located in another worksheet.
7. create and format graphs.
8. printing in spreadsheet.

Content:

1. Use spreadsheet interface - interacting with the ribbon (including hiding and displaying the ribbon)
2. Page formatting:
 - a. Default margins, Changing the margins (Left, Right, top, bottom)
 - b. Default paper size, Changing Paper size (Letter size, Legal size)
 - c. Page Orientation
 - d. Add header/footer, custom header/footer
3. Formulas and functions:
 - a. Common Math operations:
 - i. Add numbers using simple formula or sum function
 - ii. Calculate the average of numbers in a range
 - iii. Determine the smallest number in a range
 - iv. Determine the largest number in a range
 - v. Count cells that contain labels and values only
 - vi. Use simple functions to add, subtract, multiply and divide values in a range
 - b. Create conditional formulas:
 - i. Perform an action/a calculation based on the result of a condition if, sumif, countif, vlookup
 - c. Date operations:
 - i. Insert dates only
 - ii. Insert dates with time
 - iii. Calculate the difference between two dates
 - iv. Calculate the difference between two times
4. Sort data ascending or descending order:
 - a. Sort using a single column
 - b. Sort using multiple columns
5. Format data
 - a. Formatting cells:
 - i. Number formats
 - ii. Conditional formatting
 - iii. Locking
6. Use a formula to manipulate data located in another worksheet
 - a. Copying formulas and functions:
 - i. Absolute cell referencing, Relative cell referencing, Using autofill
7. Create and format graphs
 - a. Selecting appropriate chart

- b. Inserting chart titles, axes, gridlines, legends, labels, the data source
 - c. Saving graph as a separate sheet and as part of the current sheet
- Formatting graphs:
 - Adjust colours, font and borders, Resizing the graph
 - d. Graphs with trend lines
 - e. Simple Pivot tables
- 8. Printing spreadsheet
 - a. Set print area
 - b. Scaling a page to on specific sheet
 - c. Adjust to feature
 - d. Fit to feature

UNIT V – Database Management

(12 hours)

Learner Outcomes:

Upon successful completion of this unit, learners will be able to:

1. define the terms: field, record, relational database, primary key and foreign key
2. create a database
3. create a table
4. manipulate a table
5. create a relationship between two tables
6. create queries, forms, and reports
7. run queries, forms, and reports
8. import data from a spreadsheet

Content:

1. Define the terms: field, record, relational database, primary key and foreign key.
2. Create and maintain a SQL Database:
 - a. Learn the guidelines for designing database and setting field properties
 - b. Create a new database
3. Create a table:
 - a. Create and save a table
 - b. Define fields and specify a table's primary key
 - c. Add records to a table
4. Manipulate a table:
 - a. Modify the structure of a table - Delete, move and add fields, Change field properties
 - b. Copy records and import tables from another database

- c. Insert, delete and change records
5. Create a relationship between two tables.
6. Querying a Database:
 - a. Learn how to use the Query window in Design mode
 - b. Create and run select queries
 - c. Sort data in a query
 - d. Specify an exact match condition in a query
 - e. Use the and / OR logical operators
 - f. Use wildcard
7. Creating Forms and Reports:
 - a. Forms:
 - i. Create forms
 - ii. Display data using a form
 - b. Report
 - i. Create report
 - ii. Insert a picture in a report
 - iii. Preview a report
 - iv. Use tables and queries as data source for report
8. Importing data from a spreadsheet.

METHODS OF DELIVERY:

1. Lectures
2. Lab exercises
3. Individual Presentation
4. Group Presentation
5. Projects (Group and Individual)
6. Research
7. Demonstrations
8. Problem Solving
9. Case Studies and Analysis

METHODS OF ASSESSMENT AND EVALUATION:

1. Common Coursework (Group Research project)- (should include unit four (4): 10%
2. Word Processing Assessment (APA formatting, mail merge etc.) 10%
3. Presentation (using presentation software) (in appropriate professional attire 10%
4. Practical tests/assessments
 - a. Spreadsheet 10%
 - b. Data and Information 10%

5. Mid-Semester (Theory) test (should be on Units 1-4)	10%
6. Final Examination	40%
(25 MCQs 1 mark each and 5 ETQs 25 marks each to choose 3)	

Unit II (History), Unit 5, Emerging Technologies and Practical Lab Units: In class assessment - (NB. Not to be tested on final examination)

RESOURCE MATERIAL:

Prescribed:

Evans, A. R, Martin, K. & Poatsy, M.A., Technology in Action Complete. (latest edition). Prentice Hall.

Shelly G.B., & Cashman, T.J. (2012). *Discovering computers 2012*. Complete Shelly Cashman Series. KY: Course Technology Publishing.

Shelly G., Cashman T., & Vermaat M. *Microsoft Office 2010: introductory*. KY: Course Technology Publishing.

Shelly G., Cashman T., & Vermaat M. *Microsoft Office 2007: introductory*. KY: Course Technology Publishing.

Recommended:

LaBerta, C. Computers Are Your Future, Introductory, 12/E. Prentice Hall

Web Resource:

Teach-ict.com,

[Http://owl.english.purdue.edu/owl/](http://owl.english.purdue.edu/owl/)

Ebscohost Databases – ebscohost.com

ProQuest Databases – proquest.com

Springer e-books – springer.com

RUBRICS

WORDPROCESSING

COMPETENCIES	MARKS ALOTTED	MARKS EARNED
Correct margins	1	
- adjusted for binding (1)		
- not adjusted for binding (0)		
Page number	1	
- present <u>and</u> appropriately formatted (1)		
Sections	2	
- page formatting (<i>orientation, size, or margins</i>) changed within the document		
Paragraph formatting	5	
- appropriate indentation (1)		
- appropriate line spacing (1)		
- appropriate font type (1)		
- appropriate font size (1)		
- no inappropriate breaks (1)		
Main headings	3	
- ALL appropriately formatted (2)		
- formatted using the word processing styles feature (1)		
Sub headings	3	
- ALL appropriately formatted (2)		
- formatted using the word processing styles feature (1)		
Object included	1	
Table of contents	1	
- table of content present and generated by software (1)		
- not generated by software (0)		
Citation	1	

- using the appropriate software feature (1)		
- created but not using the software feature (0)		
Reference list appropriately formatted	4	
- appropriately indented (1)		
- appropriately arranged (1)		
- appropriate line spacing (1)		
- generated by software (1)		
TOTAL	22	

Merging cells	1	
Formatting	6	
- Merging Cells (1)		
- Splitting cells (1)		
- Shading cells (1)		
- Cell borders (adjusting size, removing) (2)		
- Heading repeated on each page (1)		
Formulas	6	
Add (1)		
Multiply (1)		
Average (1)		
Largest number in a range (1)		
Smallest number in a range (1)		
Number appropriately formatted (1)		
TOTAL MARKS	13	

Word Processing Table

Letter and Mail Merge

COMPETENCIES	MARKS ALOTTED	MARKS EARNED
Appropriate letter head	1	
Date inserted by software	1	
Appropriate formatting	7	
- Correct margins (1)		
- Paragraph spacing (1)		
- Paragraph indentation (1)		
- Line spacing (1)		
- Font (1)		
- Appropriate business letter format used (1)		
- Software features appropriately used to layout business letter (1)		
Mail Merge	4	
Primary document (1)		
Appropriate mail merge fields (1)		
Source document (1)		
Merge is correct (1)		
TOTAL MARKS	13	

PRESENTATION GRAPHICS

COMPETENCIES	MARKS ALOTTED	MARKS EARNED
Create a Presentation	8	
- insert a slide (1)		
- insert duplicate slides (1)		
- delete slide (1)		
- re-arrange slide (1)		
- change presentation design (1)		
- change design for selected slides only (1)		
- format presentation background (1)		
- format individual slide background (1)		
Inserting Elements (graphics, video, sound)	3	
- graphics (1)		
- video (1)		
- sound (1)		
Animation	2	
- animate an object (1)		
- animate a slide (1)		
Timing	2	
- slide transition (1)		
- object transition (1)		
TOTAL MARKS	15	

Spread Sheet

COMPETENCIES	MARKS ALOTTED	MARKS EARNED
Use formulas and functions:		
Formulas are appropriate for solving the stated problem	2	
Data validation prevents inappropriate entries and gives appropriate error message	2	
Sort data using more than one variable	1	
Formula duplicated, and data is correct (Constants are placed in cells, data is not placed directly in formula)	1	
Lookup function returns correct values from table in a separate spreadsheet	1	
Correct action is performed based on given criterion or other appropriate data	1	
Numbers are rounded using appropriate spreadsheet function	1	
Conditional formatting is used to highlight exceptions	1	
Date function appropriately used	1	
Goal seek/Data table appropriately used and produces correct information	2	
Formatting/Layout		
Spreadsheet is laid out to facilitate insertion/deletion	1	
Spreadsheet is laid out so that it can be easily interpreted	1	
Inserted row/column does not affect previously inserted spreadsheet formulae	1	
Footer/header used to communicate appropriate information	1	
Column and row headings are appropriate	1	
Page size/orientation appropriate	1	
Graphs		
Appropriate charts to represent spreadsheet data are created	2	
Graphs are appropriately labelled	1	
Extracting data to allow summary information	2	
Printing		
Print area is appropriately defined	1	
Spreadsheet row or column is set to repeat on each page	1	
Spreadsheet appropriately scaled for page	1	
TOTAL	25	

DATABASE

	MARKS ALOTTED	MARKS EARNED
COMPETENCIES		
Create and Maintain a Database:		
Create tables using correct field definition and data type	3	
Appropriate primary key defined	1	
Appropriate foreign key is used	1	
Modify data (<i>add/delete</i>)	2	
Modify table structure (<i>add/delete fields, change field properties</i>)	1	
Validate field entries (<i>validation rule, appropriate error message applied</i>)	2	
Data is imported from a spreadsheet programme	1	
Querying a Database		
Data from multiple tables/queries used to generate a new table	2	
Data is appropriately sorted in a query	1	
Query used to modify field content	2	
Query used to remove records	2	
Multiple conditions used in a single query (<i>each criterion is correct, and the result is correct</i>)	3	
At least ONE wildcard is used	2	
Reports		
Report on specified fields are generated	2	
Data is grouped	1	
Data is sorted	1	
Data is appropriately summarized (<i>totalled, averaged, counted etc.</i>)	2	
Header/footer is appropriately used	1	
Picture/Logo is appropriately inserted	1	
TOTAL MARKS	31	